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ORIGINAL ARTICLES.

PERSONAL HYGIENE IN SCHOOLS.[1]

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Read before the Section of State Medicine, at the Forty-second Annual Meeting of the American Medical Association, at Washington, D. C., May, 1891.

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Physical Training—Study—Time and Amount—Recess and Vacation—Instruction in Hygiene—By Whom Taught—How Taught—Prevention of Contagious Disease.

"Train up a child in the way he should go, and when he is old he will not depart from it." The converse of this proposition of "the wise man" is equally true. The teachers of a nation forge its future. Its schools are their workshops. No vocation is so freighted with responsibility as that which moulds the coming age.

During the formative period of their lives, the children of America are in her public schools, and they have far more to do with their physical, mental and moral forces than either the home or the church. We say physical, as well as mental and moral, for while teachers are wont to consider their business with the mind and soul, there is no such thing as mental and moral education *per se;* no such thing as physical education *per se*. The development and strength of the physical and spiritual are constantly interdependent. The evolution of higher types of human life requires co-education.

As the intellectual and moral man collects, correlates and manifests all its knowledge through the instrumentality of the body, and as its tangible relations with this world are dissolved by the death of the body, we cannot emphasize too strongly the importance of a personal hygiene that will secure the full, round development of body, mind and soul.

Personal hygiene during school life embraces physical development and physical subjection to the intellectual and moral forces. The body must be trained to the requirements of the spiritual life, whose healthful evolution can only obtain through the instrumentality of a healthy body. Whatever the possibilities of an immortal soul, while connected with the body, they lie largely in its health and strength, and as each added year gives larger knowledge and greater power to the mind, the interests of both the individual and the State demand that during school life there shall be imparted such knowledge of hygienic laws, and such habitual obedience, as will tend to secure a life of threescore years and ten, or, as modern science has demonstrated that animal life is five times the length of its development period, of fivescore years.

While physical training must take into consideration all the organs and tissues of a most complex physical structure, as well as their surroundings, each individual has a heredity and temperament, environments and an idiosyncracy that require personal consideration. One organ must not be developed at the expense of another, and that which is weak must be strengthened, for the whole is never stronger than its weakest part. The child must be developed into the semblance of "the deacon's one-horse shay,"

> That was built in such a wonderful way,
> It ran a hundred years to a day.

For the deacon said:

> There is always *somewhere* a weakest spot,
> And that's the reason, beyond a doubt,
> That a chaise *breaks down*, but doesn't *wear out*.

This development can only be attained through the formation of habits that will control the passions, emotions, appetites and desires, and by such properly regulated exercise as will secure the regular generation and distribution of nervous force, the free use of the lungs, and a circulatory action that will carry the blood to every capillary, that will excite normal secretion and excretion, give a sense of added strength, in itself invigorating, and insure peaceful and refreshing sleep, always avoiding such violent effort as tends to local injury and premature death.

In all exercise, gladness is an essential element. Joy, faith, hope, are the stimulants that make exercise, whether physical, mental or moral, healthful. All exercise, especially in child-

[1] This paper should have been published with other papers of the Section on State Medicine, but was not received by the editor of THE JOURNAL until Nov. 19, 1891.

hood, must be alternated with frequent intervals of rest. If we watch the gambols of young animals, we note constant change, but such use of every muscle as secures harmonious and healthful development. During school life, perhaps, there is nothing better than Betts' method of physical culture, in which the whole school should engage in concert, at least once during each morning and afternoon session. This exercise, properly conducted, yields the joy of the dance, calls into play all the muscles of the body, brings them into subjection to the will of the individual, and subjects the individual will to that of the instructor. During each session there should be a few moments of rest from study given to quiet social intercourse.

We have seen in the Topeka (Kansas) high school, under the charge of Prof. H. G. Lorimer, three hundred pupils go through all the varied movements of Betts' method with the military precision of a West Point drill, and with an apparent pleasure unknown to the military drill, and at the conversational recess have heard the hum of three hundred voices, at the tap of the bell, cease instantaneously, each half-spoken word cut short as by a flash of lightning. It is needless to say that the benefits of this method are not possible where the wasp-waists, the camel's hump and the kangaroo bend are cultivated; and it was pleasant to observe, in the school to which we have referred, that their distasteful and unsanitary demands were generally ignored by the pupils, their dress permitting the full benefit of the muscular movement. There was no occasion for the anatomist to ask, Where does Miss —— keep her liver? how does she inflate her lungs, or keep her pelvic organs in place? what deformity does her bustle cover? Beauty and health are alike preserved by dress that preserves unconstrained the natural form of the body. Upon every attempt of the mantau-maker to improve the masterpiece of the Supreme Architect must be written *failure*.

Every physiologist and sanitarian agrees with old Ben Johnson:

> Robes loosely flowing, haire as free,
> Such sweet neglect more taketh me
> Than all the adulteries of art,
> That strike mine eyes, but not my heart.

Utilitarians advocate manual training both as an exercise and as a co-education, arguing that, while it gives health to body and mind, and soul, too, for "the devil finds some work for idle hands to do," it should train the muscles to practical obedience to the will by giving instruction in some vocation that may be of special advantage to the individual and the world; that will enable the pupil to form an idea of what vocation he desires to follow; that will teach him to love useful employment rather than play; that will enlarge his soul and dignify honest labor.

It is asserted that three hours a day given to study, one to drawing and two to the shop educates the whole man, and that while the student makes as rapid progress in letters and science as when the whole time is devoted to them, he acquires a better knowledge of the mechanical art than those who serve a three years' apprenticeship, because the latter is for the benefit of the shop, while the former is for the benefit of the pupil, and that he obtains both a practical and a scientific knowledge of all representative implements.

While this course may not be generally applicable to the public schools, it emphasizes the importance of State, district and city schools of agriculture, mechanics and art. If there should be normal schools, at public expense, to teach teachers and agriculture, why not schools to teach artizans? The Slojd method now being introduced into American schools from Sweden, is well worthy consideration.

There are many children, as of miners, who are kept from school during the winter by necessary labor who should be provided for in a summer school, and in such a school manual training would be a beneficience. In all our larger cities such schools properly located would give the children of their dark alleys and slums, a healthful atmosphere, physical, mental, and moral, and prepare them for a useful and honorable citizenship.

Both boys and girls should have proper instruction in regard to sexual peculiarities, and upon the physical mental and moral diseases consequent upon abuse of sex. There are nameless physical vices acquired in childhood that tell upon the whole life. The school is the best place for their correction. Some may say to name them is suggestive. The argument applies equally to all sin.

In all school régime there must be a flexibility that recognizes sexual idiosyncracy. Her rapid development into womanhood is a heavy tax on female life, and the educator must devise means to meet the contingency. Until she has safely passed her first climacterix all educational methods must regard this developmental period.

As an extensor muscle rests while its opposing flexor contracts, and as by this alternate action they permit much longer periods of labor than would otherwise be admissible, so if that portion of the brain through which memory acts is used alternately with those portions through which the reasoning and other faculties act there can be longer continued intellectual training without injury. Study should not only be alternated with amusement, muscular exercise and rest, but studies that call into action one faculty, should be alternated with those that exercise other faculties, thereby not only securing rest but systematic and healthful development.

RECESS AND VACATION.

In some schools fashion and the convenience of the teacher demand one long unremitting session. If it was not illogical the worn looks of the pupils, as it draws to a close, should sufficiently condemn it. Each half hour there should be a rest of five minutes. To some this may seem a needless interruption and waste of time, but it will secure greater improvement than when longer periods are given to pretended continuous study.

A large proportion of the children in the public schools are between six and twelve years of age, and in many places there are crowded into the lower rooms from fifty to an hundred children. The younger children are often sent to school for the convenience of the home, and their instruction should be conducted largely on Kindergarten methods, adapting the lessons to the restless life of the pupils, or they should be allowed a recess of each alternate fifteen or thirty minutes, gradually decreasing the length of the recess as the child increases in years.

The crowded condition that frequently obtains in our public schools should be obviated. Frequent recesses and ventilation may to a certain extent remedy the evil but cannot remove it. It is a wrong, moral, mental, and physical to both pupil and teacher. The only excuse for the overcrowding is the expense of more teachers and more buildings. As no vocation is more important than that which develops the life and moulds the character of the next succeeding age, no economy is more false than that which hinders the full round development of the body, mind and soul of those who are to constitute the coming age.

An important and unsettled question is whether the pupils, especially in the more advanced grades, should spend their recess in the school room or out of doors. If they go out it is too often to lounge idly around, frequently obstructing the sidewalk, about which hypersensitive people are sometimes hypercritical, or to engage in some such play as marbles, which gives neither exercise or spiritual elevation, or in over exercise that returns them heated and exhausted to the school room. The only advantage in going out of the school room is to get fresh air, which should come to them more easily than they can go to it. There is no need of leaving the room except for special purpose, which should always be permissible. We can hardly conceive of a teacher so senseless and inhuman as to refuse a pupil permission to respond to the calls of nature.

During the recess exercise, no matter how perfect the ventilation, the windows should be opened before it commences, and closed as soon as it is over. This exercise, in which the whole school should engage, conducted by a competent teacher, will be as pleasant, and far more profitable than any taken on the play-grounds, no matter how well they may be adapted to the purpose, and the grounds about our public school buildings are rarely what they should be. The grounds about every school building, whether in the country or city, should cover a full square—about four acres, and should be artistically planted with trees, shrubs and flowers, giving sunshine and shade, and making the school form the one green spot in memory. At first blush this may be denounced as the thought of a crank, but it challenges examination. In the average ward school of our cities there are gathered from 500 to 1000 pupils. They need space for ventilation, and trees and shrubs for the healthful exchange of the exhaled carbonic acid gas and oxygen, and for the cultivation of taste, making the school grounds a place of beauty and a joy forever. They are thus made healthful not only for pupils and teachers, but for the whole city. Few cities have enough of these breathing places, and they are nowhere more appropriate than about their public schools. And who will object? The miser hoards his pelf through love of self, but dies at last to leave it to his heirs. Dives may have no regard for the children of the Nation, but the philanthropist and patriot lives for his children and his country's children. Her public schools are the monuments of his love of country, and his interest in those who must soon sustain its honor and maintain its glory. All our accumulations are for those who succeed us. All the duties of life, all the affairs of state will soon be transferred to them. Shall we not make the places where they are prepared to discharge them healthful and attractive? Time was when any room, any where, was deemed good enough for a school, but the world moves. While our parents loved us as we love our children; while Washington said, in his Farewell address, "Promote, then, as an object of primary importance, institutions for the general diffusion of knowledge. In proportion as the structure of a government gives force to public opinion, it is essential that public opinion should be enlightened," they knew as little about the public school and of the relation of the public school to public health as of the telephone or the electric car. Our colleges and seminaries have long recognized the beneficience of beautiful parks. Why not provide them for the schools of the people? Let the State require them of the school district and of every city or village applying for corporate powers, and let the school boards see that their out buildings cease to disgrace humanity and to destroy health.

Those members of the committee who discuss the lighting, heating and ventilation of school buildings will probably decide them defective in the large proportion of both public and private

schools, and thus emphasize the importance of periods of rest, special ventilation, physical training and sanitary surroundings. It is frequently asserted that the child who wants to learn will improve under any teacher. It may be true, as an old Scotch professor once asserted, that "ye canna make a mon out o' mud," but we have equally good authority for asserting that the Master Mechanic did make him out of the dust of the earth. Teachers, like artists, are born, not made, and should mould the virgin clay placed in their hands into men and women worthy the name. This work lies largely in their ability to make knowledge attractive, and to induce pupils to seek it for its own sake rather than for the sake of some ulterior reward, or through fear of punishment. It is through such motives, their worry, anxiety and depression that education becomes a source of mental, moral and physical disease. Point out the possibilities of the soul, awaken the aspirations of the pupil, demonstrate the beauty of wisdom and the power of knowledge, teach how to use facts obtained for the attainment of other facts, put gladness into the heart of the child, make education joyous, lead forth the mind "in green pastures and beside still waters," and there will be healthy and harmonious growth. Tell a child how bad he is and he will be bad, how stupid, and he will remain stupid. The master who marches about the school room with a storm-cloud on his brow, thunder in his voice and lightning in his hand, should be transferred to the kingdom of his satanic majesty, and the teacher who endeavors to instil knowledge through the back of the pupil should remember that "a rod is for the back of fools," of whom he is the chief. The only reason why corporeal punishment in government is restricted to children is their inability to successfully resist. It is cowardly and brutalizing and tends to make all educational methods hateful. "Love is the fulfilling of the law." The midday recess is of special importance, as it generally includes the principal meal of the day. Eating thus becomes an important part of the nooning. Children require food for both repair and growth. They should be taught to eat slowly and masticate thoroughly, and to eat with thanks and a glad heart, as sullenness and fault-finding during meals tend to indigestion and disease. They should have a nutritious and easily digested diet, and be encouraged to eat fat, as oil facilitates metamorphosis and is essential to healthy growth. The officers in the regular army are required to inspect every meal prepared for the soldiers and see that the rations are good, properly cooked and abundant, and that the men, selected for their robust health, are clean, well clad and housed, and have regular exercise. Are not its children as much the wards of a Nation as its soldiers? How much more important that trustees, directors, teachers, parents, all who have charge of the children of the Nation should give careful attention to all that pertains to their health and development. Neither the mind nor body should be permitted active exercise immediately before or after a full meal. Digestion demands nervous energy, and if diverted by mental or physical action there will be indigestion, and mal nutrition. Children living long distances from the school should have a dining hall near by, or carry their dinners with them. Instead of eating alone, in a corner, there should be a proper room assigned for lunch, or a picnic in the grove that should surround the school building, where the children of the rich can exchange their luxuries for the homely fare of their poorer school-mates, learning that it is "more blessed to give than to receive," and finding good digestion in receiving and communicating joy.

During school life the importance of refreshing sleep, and enough of it, cannot be too strongly emphasized. Exciting entertainments, late study, everything that trenches upon the hours that should be devoted to sleep, or causes insomnia, must be avoided. The "six hours sleep for students and eight for babes and fools," is as senseless as "Graham gems for students." The development of a strong mind in a strong body requires a nourishing diet, plenty of exercise and plenty of sleep, and a time for everything and everything in its time.

Action in any part of the body destroys tissue, but it carries an increased flow of blood to the part, increased cell proliferation and vital force, and increases the demand for rest and repair.

Vacations should embrace the warm months—July, August and September—and the long session should be broken by a fortnight's rest at Christmas, and perhaps a week at Easter. During the long summer vacation the pupil should seek physical development by engaging in home labor, or by a summer outing, according to pecuniary ability and residence.

Some sanitarians advocate one long school session. Permit me to quote from a paper read before the Kansas State Sanitary Convention, 1886, which I still endorse:

"The protracted daily sessions practiced in some places are unsanitary. They may minister to the convenience of the parents and teachers, but they violate every principle of school hygiene. In childhood and youth the brain and muscle, because of their ready wear and tear, soon tire, but they are quickly renewed if opportunity is given for repair. The long five hour sessions not only cause excessive exhaustion from long continued labor, but they give no time for dinner, a necessity to the growing child, who should have three meals each day, with an ample meal at noon, with time to eat and digest it. . . .

A sufficient nooning, with a meal near at hand, is a school necessity.

"When the five hour system is practiced, a single glance, during its last hours, at the worn, weary and anxious faces of the pupils, and at the unseemly haste with which they leave their *prison-house*, are sufficient to condemn it. Long continued attendance, with fixedness of muscle or mind, are incompatible with health at any school age."[1]

STUDY—TIME AND AMOUNT.

Very few persons are ever injured by study properly pursued. Regular, methodical brain work, adapted to the physical and mental strength of the student, is as healthful as other labor. It vitalizes while it stores the mind with useful knowledge and keeps alive interest in the world of thought and duty. Dunglison in his *Human Health* says, "Literary pursuits are directly favorable to long life, whether they require the exercise of the memory, the judgment or the imagination, and when the health is apparently injured by them the evil is dependent rather on collateral circumstances." Mental development is in harmony with all we know of the laws of life. It is only its methods and associated conditions that injure. All education must keep in view the importance of such development of the spiritual powers with which the Creator has endowed man as will secure the greatest good to the individual and to the world. Pure intellectual culture does not control a tendency to debauchery and crime. Education must develop those powers that hold in subjection the appetites, passions and desires, that, unrestrained, unbalance the mental and moral forces and tend to disease and death, transmitting hereditary tendencies that produce physical, mental and moral debasement in the whole line of posterity. *Morality*, the righteousness of right thinking and right doing, must form a part of all education. "Virtue and morality are a necessary spring of popular government." Their culture involves a knowledge of the meaning of our existence, and the existence of the world about us, a knowledge of the final causes of the universe. Though theology, as commonly understood, should not enter into the education of our public schools, a knowledge of God and humanity, and of our relations to both, is essential to the public good. Nothing else will press home to heart and mind the duties we owe to ourselves and to each other as component parts of a great government, as members of a common family. Nothing else will keep alive interest in those governmental measures and methods that protect the health, and secure the development and prolong the lives of the people.

[1] "The Sanitary Conditions of School Houses and School Life," by W. L. Schenck, M.D., Annual Report of Kansas State Board of Health, 1886, p. 184.

The physical as well as the mental and moral health of the pupil is injured by the sensational novel that unduly excites passions and emotions that should lie dormant in childhood. Every book with an impure, hidden meaning should be as far removed from children as those that indulge in open infamy, and both the minds and morals of children are debased by the detailed and realistic reports of crime that occupy no inconsiderable portion of the daily press.

"Vice is a monster of so frightful mien
As, to be hated, needs but to be seen;
Yet seen too oft, familiar with her face,
We first endure, then pity, then embrace."

If the public stomach did not demand it the newspapers would not wallow in the gutter of moral filth to gratify its appetite. Where can the public taste be corrected and the moral purity and strength of the nation be developed better than in the public school?

The machine work so common in many schools is responsible for much of the disease charged to education. All school methods must possess a certain amount of flexibility. Every child has its idiosyncracy which the successful teacher must give, as do successful physicians, the fullest possible consideration, and during school life there are additional exigencies, such as the passage from girlhood to womanhood, that cannot be safely ignored, and that demand relief from worry, rest from work and protection against inclement weather, without a demand from *the master* of the why and the wherefore. He should know enough of physiology and psychology to understand that girlhood has functions that a proper delicacy does not care to reveal.

Though we may not measure the effect of certain conditions, or the force brain or muscle may safely exert under special stimulants, or how long they may be continued, we know there are limitations that vary in different individuals and under differing conditions, and that the power of continued endurance is never so great in childhood as in mature life.

Long continued, unintermitting action, whether of brain, muscle or gland, exhausts nervous excitability. The nearest approach to perpetual activity is found in the involuntary muscles, but there nature provides alternating action and rest, systole and diastole, inspiration and expiration. Rest is as necessary to recuperation of brain as of muscle. Sir Walter Scott, when asked how many hours he devoted to study, replied, "I reckon five and a half hours a very good day's work for the mind when engaged in original composition. I can very seldom work six hours, and I suspect what is written after five or six hours of hard mental effort is not worth much. I try to get two or three of these hours in before breakfast, and the remainder as soon after as may be,

so as to have the afternoon free to walk, or ride, or idle."

If the strong mind of England's great author could not endure more than five or six hours of daily mental effort, what are we to think of the educator who would work his immature pupils all day and half the night?

After the long fast of the night, most persons require a light breakfast, preceded by such exercise as comes from a morning bath, followed by a good rubbing, before commencing study. For the school child the bath, home chores and the school road are exercise enough for the morning, and three hours of study during the morning, less the amount deducted for conversation and calisthenics, and three hours after the nooning, is study enough for children commencing their 'teens, with an hour or two in the evening as they grow older.

INSTRUCTION IN HYGIENE.

If practical hygiene is important to school life, pupils should be taught, as far as they are capable of comprehending, the principles upon which it is based, and its application to the broader fields of life upon which they must soon enter. If the development of the intellectual, moral and physical forces of the children of the nation is important, their preservation is not less important. This involves a knowledge of the laws of life and the causes of disease, and the means of their prevention, removal or restriction. Biology and physiology, etiology and preventive medicine, should form an important part of all education. Properly pursued, they interest while they instruct, and while they store the mind with knowledge of vital import, they stimulate to investigation and research. And when the electors of a State and their representatives have learned that through vaccination properly enforced by all nations, small-pox will exist only in history; when they understand that filth accumulations not only infect the air we breathe, the water we drink and the food we eat; not only engender and intensify septic diseases, but make every injury and disease more formidable, there will be adequate legal provision for the protection of the health and life of the people. How is this to be known unless taught? how taught without a teacher? Many of the States provide that physiology and hygiene, and the relation of alcoholics to health, shall form a part of our common school education. But as comparatively few of the teachers in the public schools have more than a crude and elementary knowledge of these important branches until they acquire the required knowledge, the State should provide special instructors to teach both teachers and pupils, and the instruction should be as far as possible macroscopic, microscopic and chemical, by lectures and through scientific text-books.

PREVENTION OF CONTAGIOUS DISEASES.

It is the duty of the State to protect those it gathers into its public schools, and to protect the community against the diseases that may be disseminated through the school, while private schools that fail to extend known and needed protection should be held for the disease they occasion. Childhood is especially susceptible to infectious and contagious diseases, both because of its impressibility and its lack of exemption through contact, and in childhood many of the zymotic diseases are especially grave. In America the free schools gather their pupils from all classes and localities, and for many hours keep them in crowded rooms and in the closest personal relations. In no other assemblage of human beings is there greater opportunity of contracting and spreading contagious and infectious diseases.

When a contagion appears in a school, there is sometimes a doubt as to the best course to be pursued. The common one is to dismiss the school. When small-pox comes to a private house, we isolate the individual case, disinfect and vaccinate all who have been exposed, and keep them under strict surveillance until danger has passed. When yellow fever invades a city, we throw a cordon about it, and prevent those who can carry with them the contagion from leaving the district until safety is assured. When a case of small-pox occurs in a college it is isolated, those who are known to have been in contact with it are kept under inspection, while all others go to their several homes. Why? If they have not been exposed to the disease, while those who have are isolated, why not continue the college exercises? If they have been exposed, sending them away may communicate the disease to those they meet *en route*, or establish it at their homes. Scarlet fever, diphtheria or measles occurs in a public school. What shall be done? Dismiss the school? Yes, if it is best to turn those that have been exposed into the street, that they may carry the disease whithersoever they will. Is it not better to have existing cases isolated, those who are known to have been exposed reported to the health officer, the rooms where they attended thoroughly disinfected, and the school continued. Is not this better than to give those *who may have been* exposed the freedom of the city? When a grave epidemic prevails, the conditions are changed, and the public school should be closed.

It is hardly necessary to say that children from a home where a grave contagious disease exists should not only be kept from school, but from the street, and should be thoroughly disinfected before they are permitted to return to society. What are the grave diseases that should exclude from school and from society? On this question

sanitarians may differ. Some may include consumption, others typhoid fever. All are not agreed that the former is contagious, and its course sometimes covers enough of life to exclude a whole family from all school privileges; the latter, communicated through discharges from the alimentary canal conveyed to the alimentary canal, will hardly be carried to school. Smallpox is still the terror of the people. For ages it was the great destroyer, attacking one-sixth of the entire population of the globe, destroying one-half of those attacked, robbing those it spared of their comeliness, and often of all hope of health. While to the unprotected it is as virulent as ever, since the discovery of the immortal Jenner it is easily shorn of its power, the possibilities of contagion being reduced to a minimum by a measure that rarely involves either hardship or danger. Neither the incipient insanity of the crank, nor the unrighteous greed of the quack, who would fatten on its desolations, should be permitted to allow any child to enter a public school until properly vaccinated. When a case occurs in a school district, there should be revaccination until no effect is produced. To make assurance assured, children from the home where it exists should not be admitted to the school, and should be kept from the street.

Diphtheria, scarlet fever, cholera, yellow fever, measles, mumps, pertussis and scabies, should exclude children from the homes where they exist until safety is assured through the certificate of a proper health officer.

As that which is to be is evolved through that which now is, the State has no more sacred duty and can have no grander aspiration than the protection of its children from all that deteriorates, and the development of all that strengthens and ennobles.

A CONTRIBUTION FOR DEFINITE AND KNOWN QUANTITY AND QUALITY IN MINERAL WATERS.

Read by title at the Meeting of the Mississippi Valley Medical Association, Oct. 14, 15 and 16, 1891, held at St. Louis, Mo.

BY GEO. F. HULBERT M.D.,
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As medical science steps forward in her ceaseless stride for more and better understanding of disease in the human economy, so too is the desire and necessity created for better and more efficient means of relief. The study and use of the armamentarium at our command for this purpose has gradually and steadily brought before us that exceedingly valuable class of remedies known as mineral waters.

Nature, in her beneficial and bounteous provision for the wants of mankind, has herein provided a weapon of defense, which, unfortunately, has not commanded the special attention of the profession *en masse*, but has been accepted and utilized by only the few. Why this has been so is easily understood.

1. The presentation of the character and value of mineral waters has only too frequently been in the lines of the charlatan and unscientific, advertised by those interested in a reckless, catch-penny style, and certified to by those who are incompetent to diagnose the conditions for which they are desirable or applicable.

2. The necessity of proceeding to the source of supply for the full benefits on the part of the patient, or accepting the admitted makeshift, purchase and use of the waters at home, put up and prepared only too frequently in an altered and inefficient condition.

3. The failure on the part of the profession in the use of natural mineral waters as presented in the open market to get results claimed by those interested.

4. Those who have overcome the difficulties presented have, speaking in a general way, done so by the use of the artificial product.

The subject is of sufficient importance, and the benefits to be derived are of such a character, that we feel compelled to speak plainly, and to the point, as to the why and wherefore of this discrepancy, in order that the way may be pointed out to intelligently evade the difficulties and disappointments.

It is agreed that the therapeutical value of a mineral water is dependent upon the quality and quantity of its solid ingredients, and the temperature at which it issues from the earth. Dr. F. A. Struve, of Dresden, more than eighty years ago clearly established the fact that the composition of a mineral water was due to the dissolving of mineral substances from the geological strata through which the water passed, through and by the aid of the solvent gases (carbon dioxide), a more or less high temperature, and the action of increased pressure in the interior of the earth. The water then, at the *mouth of the spring only*, will contain its full development chemically and exert its full effect medicinally.

The mineral substances composing the active principles of mineral waters are mainly soluble alkaline and earthy salts, and such metallic ones as are readily soluble, but whose solubility is quickly changed by various combinations with oxygen. The omnipresent oxygen of the atmosphere, the volatile propensity of the carbon dioxide, the release from pressure, as well as change in temperature, necessitates an almost inevitable prompt chemical change on the escape of the water from the spring. This is specially noticeable in the ferrous and manganous waters. They are seen bubbling up in clear, sparkling, pure compositions from the bottom of the spring, which, upon discharging into the open air,

promptly and fully precipitates the sensitive metallic salts in the form of the insoluble ferric and manganic salts. In those waters containing the earthy carbonates, the release from pressure on their appearance at the surface of the spring at once precipitates them as mono-carbonates by setting free the other equivalent of carbon dioxide. This would not have occurred if the proper degree of pressure had been maintained.

At Carlsbad, the hot "Sprudelwasser" forms a thin, earthy and ferric carbonate on the side of the glass while the patient is slowly emptying it, thus proving the prompt and almost immediate decomposition of thermal waters.

Dr. Geo. E. Walton, in his "Mineral Springs of the United States and Canada," page 113, says: "There is not the care used in bottling waters that should be observed, and there are but few waters that are adapted for shipment."

From the above, it is readily seen that only at the spring itself are we positive and sure to receive the water as Nature has elaborated it and prepared it for the use for which it is applicable.

It is well to remark that the mysterious occult properties so much enlarged upon by the parties interested in any particular spring or springs is not comprehensible to the scientific mind, but must be referred to the personal equation of the patient. The real fact that is thus presented consists only in the *combination on the part of Nature of conditions accomplishing a certain purpose* that gives a value to this or that spring. To the uninformed this is unknown, therefore occult; to the chemist it is determinable and known, therefore ceases to be occult.

As regards the question of analysis of the waters as actually presented by Nature, there have been and are to this day many chances for error and careless work, but the scientific chemist of to day is perfectly competent to determine the exact ingredients and their quantity, so that the statement made by some of the impossibility of giving a correct analysis will not hold good.

The essentials for this work are as follows:

The analysis of a mineral water must commence at the springs. Its temperature must be ascertained at different times of the day, and its relation established to the temperature of the surface.

The emission of gases, and their nature, has to be observed, and samples of the water mixed here, with known quantities of re-agents, to determine the quantities of free gases contained in the spring. The water to be examined at the laboratory should be carefully filled into glass-stoppered bottles from underneath the surface of the spring, in order to avoid any and every decomposition by access of the air. Chlorine, sulphuric acid and silicic acid must be determined in separate quantities of water; iron, lime and magnesia are determined in the same quantity of water, one after another, as it is necessary to separate the iron before you can determine the lime, and this substance before you can get at the magnesia.

The alkalies must be determined in a portion of the water from which iron, lime and magnesia have become separated by such processes as do not add any alkaline substance to the water. Aluminum, barium, strontium and manganum oxide or protoxide, as well as phosphoric acid and iodine, bromide and other substances which usually occur in mineral waters in but small quantities, are determined from large quantities of water concentrated by evaporation in such manner as to obtain also the volatile substances in separate vessels and solutions.

If carried on correctly, and the water for analysis has been obtained at and from the springs in the proper manner, all volatile and solid ingredients can be determined by the expert chemist, except the mysterious soul of the spring which is attributed to them by people who believe in supernatural powers in mineral-water springs.

In the very nature of things, then, the great labor, expense and scientific knowledge required to properly comprehend and overcome the almost insurmountable difficulties, do we see why it is that mineral water, as found at the springs and in the market, differ so much in quality and results attained by their use. The door is open to all sorts of deception, and the results of accurate scientific investigation of many of the products presented in the open market and sold as the real genuine natural product, are startling in the discrepancies discovered.

As illustrating the facts discovered, the "Carlsbad Sprudel Salt" was found to contain 85 to 98 per cent. of glauber salts, when the analysis of the water at the springs showed the percentage in the solid contents to be only about 45 per cent. Again, in the Apollinaris, it is found to have no iron and much salt, due to the manner in which the water is obtained and put up, while at the springs iron is present and much less salt.

Again, in "Determination of Lithia in Mineral Waters," by E. Waller, Ph.D., a paper published in the *Journal of the American Chemical Society*, Vol. XII, No. 6, we find further testimony of unreliability in "quality and quantity" of the several natural lithia waters as presented for sale in the market. After giving the three methods non-available for determining the amounts of lithia salts—1, the phosphate method (Mayn's modification); 2, the amyl alcohol method (Gooch); 3, the flouride method (Carnot)—in all of which the spectroscope test is applied for control of errors, he arrives at the following definite results:

In the Farmville Lithia Water, after repeated experiments with large quantities of the water

(10 litres), concentrated by evaporation only, sufficient lithia was found to produce the lithia line in the spectroscope, but not enough for quantitative estimation. With the Buffalo Lithia Water the reaction for lithium was more distinct when considerable quantities of the water were concentrated. From 20 litres of the water was obtained lithium sulphate corresponding to 0.0185 part Li. H. CO_3 per 100,000 of water.

Dr. Karl Luedeking, chemist at Washington University, in making an analysis of the No. 2 Spring water of this concern, failed to find any lithia whatever.

The Londonderry water gave the lithia reaction without much difficulty, being a little over 4 parts to 100,000. "The company puts up some of the water in half-gallon bottles (called in their circulars 'Sulpho-Carbonated'), which is charged with CO_2, and has also received the addition of some salts. The amounts of salts added appear to be somewhat irregular. For instance, the following results were obtained in parts per 100,000 of the water:

Half-gallon bottles,	37.35	total solids.
Pint bottles A.,	149.4	" "
" " B.,	104.2	" "
Average of 11 others,	224.7	" "

The proportion of lithium was the same as for the still water."

This extract, taken from the paper of Prof. Waller, in connection with the further statement that at several times the water has been found to contain no lithia whatever by other competent chemists as well as by himself, as well as the fact that none of the water can be obtained from the springs by disinterested parties or visitors, all access to the springs being denied, and applications for water referred to the bottling establishment in Nashua, needs no comment from us; the facts speak for themselves.

The Saratoga Hathorn proved to be the strongest lithia water examined, and contained the full percentage the analysis calls for (12 to 14 parts Li. H. CO_3 per 100,000 parts of the water, corresponding to ⅞ grains per U. S. gallon).

One of the most difficult class of waters to handle away from the springs is the Ferro Manganous. We are pleased to give honor and credit to one of these springs, at least, for a determined endeavor to meet the requirements, and that is to the *Excelsior Spring Co. of Missouri.* They have simply accomplished all that can be done in the direction of presenting their product at a distance from the springs in its natural composition. The water of the spring referred to, "The Regent," is a Ferro Manganous water. It is only put up in bottles. The supply pipe to the bottling rack is started well down beneath the surface of the spring, a large hood being on the end; the water is then carried direct to the bottling department through pipe and pump. Carbon dioxide is forced into the empty bottle, thereby expelling the atmospheric air from it; then it is filled with the water under high pressure of carbon dioxide, and securely corked. In this way at no time does the water come into contact with the oxygen of the air, and therefore retains its delicate chemical composition. It is consequently rare to find any precipitate in the "Regent Water," as it is called, of this spring, clearly proving the fact that its composition is the natural one. For a water of its class it is not excelled by any, and to those who can go to the springs, the "Regent Water" and the "Elms" are a delightful, health-giving combination to enjoy.

With the known variation from time to time in the proportion of ingredients of mineral waters at the springs, as well as the exceedingly weak impregnation of most of them by mineral substances necessitating the use of large quantities for very long periods, and the undoubted liability to and fact of their alteration, adulteration, chemical variability as compared to the natural product at the springs, it is not at all strange that the profession at large has little satisfaction or confidence in their use. In all cases where we get definite results, it is due to the fact, that we have a water of sufficient power and quality. The attainment of results being the exception, what can we do? *Use what we know has a definite quality and quantity at all times and results will be definite.* Hence we find a legitimate and useful field for the artificial product. *The necessary source* for the artificial product is an *honest, competent, scientific chemist.*

The following is taken from Liebig's Chemical Dictionary, 1851, Vol. v, p. 320. "Prompted partly by scientific interest and partly by the desire to offer to sufferers who live long distances from mineral springs an opportunity of enjoying their beneficial action, efforts were made to reproduce these waters by artificial process—and in the course of time this end has been attained with such perfection as to permit the artificial product to place itself along side of and compete in every respect with the natural mineral waters." This is authoritative commendation of honest and scientific labor, the pioneer in which was Dr. F. A. Struve, of Dresden, who established and proved not only by actual experiment the theory of the natural formation of mineral waters, but produced the first artificial Carlsbad water and administered it in conjunction with Dr. Soltmann, in the first season to over 300 patients, with results fully as satisfactory as attained in the use of the natural Carlsbad Sprudel at the Springs. The good work has progressed until to-day, when there is no mineral water of any positive value which has not been satisfactorily manufactured, and best of all, there is no mineral water known that cannot be and is successfully

modified or improved to meet the determined requirements of any disease for which it may be of value. In this country humanity as well as the medical profession is under lasting obligations to two gentlemen who have, in spite of every conceivable obstacle that could be thrown in their way by interested parties of mineral springs and products, steadily and persistently applied their scientific (medical and chemical) attainments and means, to the end that there should be presented to those desiring them, artificial or manufactured mineral waters of a positively known and definite value as relates to quality and quantity of solid ingredients, and thus insure efficiency and prompt results in their use. We refer to Carl H. Schultz, of New York, and Dr. Enno Sander of St. Louis.

It is only those who are familiar with the mineral water question and the celebrated mineral water controversy, "that can appreciate" the work accomplished by these gentlemen, and when we consider that scientific precision in the manufacture, honesty of purpose in the presentation of their products, and broad scientific equipment and attainments in qualification for the work they had in hand, have been the motive and power behind the throne, "damning with faint praise" is simply an impossibility from any one actuated by the principles of truth and honor.

Our practical experience with the manufactured product has been confined to that of Dr. Enno Sander, of St. Louis, and for the purpose of demonstrating their purity and efficiency we desire to call special attention to only three of the waters of this laboratory. "The Tenfold Carlsbad Sprudel," the "Garrod Spa" or "Lithia Potash Water," and the sparkling "Benzoated Lithium Water."

The Carlsbad Water is made in three strengths, the single, double and tenfold; the purpose of this being to enable the consumer to get the full advantage of the original *thermal* effects, without exposing the manufactured water to the risky and decomposing influences of heating each dose. This is at once accomplished by taking an equal or many fold quantity of hot water, adding direct from the bottle the necessary quantity of the mineral water and at once drinking the same.

The value of the Carlsbad water is beyond controversy and cavil in most hepatic troubles and many gastric intestinal diseases; hyperæmic conditions of the liver from whatever cause are most frequently relieved. This one therapeutic effect is of extended range. Frerichs testifies in no doubtful manner as to hepatic diseases. Niemeyer is exceedingly explicit as to the value and benefits derived in gastric catarrh.

As illustrating the efficiency of the Sander's artificial product, we present the following case of hepatic hyperæmia and catarrh of hepatic ducts and duodemia, with the development of biliary gall stones, treated by the use of the "Tenfold Carlsbad Water." J. H. P.: American aged 50; came under my observation January 1st, 1889. His family history was a remarkable one of intemperance and abuse of alcohol. His father, three uncles, both grandparents (male) and three brothers were what to-day in common slang would be termed "steady lushers," with no choice as to quality of liquor consumed. No history of rheumatism, gout or nervous disease, but in all there were intestinal and gastric troubles. Individually the patient had been a constant steady miscellaneous drinker from 28 years of age up to 46, rarely what he considered intoxicated. All during his life and up to this time had never been sick or incapacitated from his labor, that of bank teller. Since 46 years of age he has been temperate, rarely using anything. About two years ago, without any apparent cause or deterioration of his general health, he began to suffer with pains in the right lumbar region, more like a soreness or oversensitiveness, not aggravated by motion. The attack would commence every night from 9 to 11 P.M., and become sufficient in severity to disturb his rest; relief was usually attained in an hour or two by means of hot mustard applications. This deviation from health was accompanied by rectal disturbances in the way of a prolapse of moderate severity, and continued for a period of six months with no apparent aggravation, when pain was noticed in left part of right hypochondria. This, while, like the other pains, was more severe and developed an ill-defined sense of threatened danger. Shortly after, bleeding of the abdomen supervened and his nightly sense of misery became more severe, to the degree that medical advice was demanded. "*Parri passu*" with medical attendance his sufferings increased, demanding opium for relief, untill the crisis was at last reached by a severe attack of nausea and vomiting and the appearance of a pronounced attack of jaundice; pains ceased, jaundice gradually disappeared and for nine months he was a well man in his own opinion. The second attack then supervened, passed through the same stages, save that it lasted only ten days and was tenfold more severe. Clay colored stools were noticed during this attack; the lumbar distress did not entirely subside with the close of this attack, but nightly visited him for about two months, when his third attack came on, less severe than the second, but requiring three grains of opium every night to relieve it; it prolonged, up to the time we first saw him. Examination revealed a moral coward in a man of education and intelligence, completely cowed by his sufferings; fat and flabby of tissue, skin dry, tongue heavily coated, bowels fairly regular, appetite fair, urine smoky with bile reaction;

sensitiveness over duodenum and ileo-cæcal valve, no distension of the bladder detected, liver enlarged, but not sensitive. Every means and method of treatment found on the books or known to us was faithfully tried. That seemingly giving the most temporary relief and keeping things in abeyance, was the use of dioscorea villosa in conjunction with papya carica and saline purgation. The sweet oil method was a total failure. By the above means it was possible to dispense with opium save now and then. Close and continued examination finally revealed biliary hepatic stones. No large concretions were found at any time. This cleared up the question as to the part played by the condition of the hepatic ducts, and Carlsbad Sprudel water (Sander's) was selected as the sole therapeutic measure. A wine glass of the tenfold strength in a goblet of *hot water* was used three times a day; in one week his pains entirely ceased, general health began to improve and in one month he was symptomatically in his normal condition. The water was continued for three months steadily, when it was cut down to a single dose at bed time and kept up for two months more. He has not had an attack since; from time to time he uses the water as a safeguard on his own responsibility.

Another case of hepatic disturbance in which the condition seemed from the evidence to be inspissation of the gall, coming on at irregular periods, occurred in J. A. R., a Pullman palace car conductor. His attacks were preceded by a period of constipation and gastric duodenal distress lasting for about a week, when a severe attack of hepatic colic would develop, gradually and steadily increasing, reaching its acme in severe nausea and vomiting. No jaundice was present nor has been at any time. Free saline purgative usually brought temporary relief. He was placed upon Carlsbad water tenfold (Sander's) and for nearly two years has not had an attack; the water was used steadily for six months.

The formula of the Sander's Carlsbad is that of the Natural Carlsbad Sprudel, as determined by the analysis of Berzelius and Bauer; being rich in its proportion of sodium sulphate, carbonate and chloride, and positively uniform in strength, it is readily seen, why in its use we are enabled to attain uniform results. In the use of the Carlsbad water it is necessary that the same care and conditions be attained in its administration as at the springs. It is an alkaline *thermal* water, it must therefore be used hot, 112° to as hot as can be borne. The range in temperature at the springs is from 112° to 152°. The best time for use is an hour before or two to three hours after eating. Used with these precautions and for a sufficient length of time, no one will fail to get definite and positive results from its use.

In our consideration of the Garrod Spa, the Lithia Potash Water, and the Benzoated Lithium Water of Sander's Laboratory, we are in a position to speak positively as to their value in rheumatism, gout, lithiasis, and allied disorders, having absolutely discarded from our armamentarium in the handling of these diseases, all other internal medication save that needed to meet complications for the time being. It is entirely unnessary to enter into an extended consideration of etiology, symptomatology, or unsatisfactory therapeutic experiences of the part in the management of these diseases; sufficient to say that to-day the Garrod philosophy, interpretation, comprehension and treatment of gout, rheumatism and allied disorders is the only conception that can be successfully sustained. In brief, that it is some interference or defect in the metabolic changes which take place in the human economy resulting to the presence of an excess of uric acid, that the alkaline method of treatment is the most effective yet presented.

In a paper recently read by Sir Wm. Roberts before the Royal Medical and Chirurgical Society, we find much light thrown upon the immediate determining cause of this excess of uric acid, and observations of exceeding importance regarding the behavior of the same in the blood and tissues and especially interesting in regard to the phenomena of gout. He demonstrates the fact that uric acid in the blood exists in the form of the *soluble quad-urate*. Under certain conditions, where the alkalinity of the blood be lessened or the excretion of the quad-urate by the kidneys be delayed, the acid combines with the sodium carbonate and forms the bi-urate of sodium, a salt exceedingly insoluble in blood serum. Synovia being less alkaline than the blood, it is suggested, that this may account for the deposit of bi urate crystals in and about the joints. The immediate effect being to relieve the blood of the excess of acid; this at once becomes consistent with the chemical phenomena observed after an attack of gout. The periodicity of gout is explained by what he terms the process of "maturation," which is the progressive taking up of the quad-urates by the blood and fluids of the body, when finally the point is reached (possibly saturation), when it suddenly breaks up into the bi-urates and precipitates, earlier in the synovial than in the blood tissues. The stage of solution was hastened by increased alkalinity of media; no appreciable effect in retarding the period of maturation and precipitation was produced by this means, and the addition of salts of sodium notably hastened the process. The addition of salts of potassium, lithium or magnesium did not appear to have any effect either way, save the chloride of potassium seemed to prolong the period of maturation. The *factor* in determining the duration of the period of maturation was the

proportion of uric acid, hence the necessity for caution in administrating alkalies, which if administered when the blood is near the point of saturation by uric acid, or near the close of the period of maturation, may, by favoring the formation of the urate, precipitate an attack of gout. Taken earlier when the margin of solubility for the uric acid is greater, the alkalies will facilitate the conversion of the acid into the quad-urates and present them for elimination by the kidneys. This accomplished freely, the danger of an attack ceases. It is clear that large quantities of water are needed. From the above it is evident, and the observations tally with experiences in the management of these troubles, that to receive the full benefit of the alkaline treatment, elimination by the kidneys especially is paramount; this absent, then the skin and bowels must be brought into play. The sodium salts are not desirable, and morever the treatment must be sufficiently prolonged to overcome not only the direct exciting cause, but also possibly delayed, by treatment, the period of saturation.

The above researches also give us valuable suggestions for therapeutics and combinations to meet especial conditions. In the administration of alkalies it would seem proper that we have two formulas, the one for the milder manifestation such as the rheumatic, where apparently, according to Dr. Roberts, the process may be considered the accumulation of the excess of uric acid and delay in its passage into the quad-urate, giving us the inflammatory stage by toxæmia, so to speak, and the other where the process is more fully developed passing into the stage of quad-urate formation with the ultimate precipitation of the bi-urate in crystals and concretions, giving us inflammatory phenomena more directly if not wholly by mechanical effects.

It is beyond controversy that the lithium carbonates or preferably bicarbonates, are of pre-eminent value. In the light of Dr. Roberts' observations it may be suggested that the most easily broken up bi-carbonate of lithium, might be, being present in the blood, that as the quad-urates were produced, they would select the former in preference to the carbonate of sodium, thereby producing the soluble urate of lithium, and not the insoluble bi-urate of sodium. In order that the degree of alkalinity be not too pronounced or perniciously hastened, the guarding of the process by the benzoate of lithium, would not only offer more lithium for conversion into the soluble urate of lithium, but by setting the benzoic acid free, would insure the acidity of the excretion, the urine, as well as prevent too much alkalinity of the blood. Hence we find the Lithia Potash water best adapted for the rheumatic, and the Benzoated Lithium water for gout, rheumatic gout, renal and vesical concretions. It has been our practice to use the latter in all acute severe rheumatic conditions, until they were controlled, then change for the steady, long continued use to the former, the "Garrod Spa" water. In gout, rheumatic gout, gravel and vesical concretions the benzoated has been of most value until the morbid process was well nigh completely overcome. The formula is follows:

℞. Lithium Benzoate, gr., 12.823.
Lithium Bicarbonate, gr., 13,784.
Potassium Bicarbonate, gr., 10.000.
Sodium Chloride, gr., 10.000.
Carbonated Water, ℥xvj. ℿ.

The usual dose is one third pint three times a day between meals and at bed time; in severe cases increased to one half pint at same time of day until symptoms are under control; then the former dose.

The "Garrod Spa," named after Dr. Garrod, is the above formula with the lithium benzoate omitted. These formulas are not susceptible of being compounded by simple mixture, but must be produced under pressure and in the nascent state, hence require skill and caution in manufacture.

As in demonstration of their great value and reliability we desire to present the following brief case records for consideration.

Mrs. M.: Mulatto aged 30, was taken with a severe attack of neuralgic rheumatism. Her environment was miserable in every respect. The symptoms were for a time quite puzzling, resembling in many points a case of trichina. At no time was there any synovial inflammation and only at a late stage were the fibrous structure about the joints involved; we were not able to find a voluntary muscle which was not exceedingly sore and tender to touch. Movement was impossible without agonizing pain. Emaciation was rapid and temperature ranged from 101-103°. For three long months did we medicate this patient with alkalies and all other drugs considered of any value, until she and her physician became thoroughly disgusted. Having only attained slight amelioration of her sufferings, finally selected the Garrod Spa (Sander's) on the recommendation of a brother practitioner. In two weeks the symptoms began to abate, in six weeks she was able to walk and in ten weeks she was symptomatically well. This was our first experience with artificial mineral waters, and we were inclined to be a convert. The next case presented occurred in the St. Louis City Hospital under the care of Dr. H. C. Dalton, a woman pregnant, suffering from rheumatism. The following report from Dr. Dalton will suffice.

OFFICE OF CITY HOSPITAL,
H. C. DALTON, M.D, Supt. and Surgeon in Charge.
ST. LOUIS, MO., Oct. 10, 1891.

DR. GEORGE HULBERT, 3026 Pine street:

Dear Doctor.—Your card of yesterday received. Chrissy S. was admitted to this institution May 22, 1891, suffering from a very acute attack of articular rheumatism. She was in her fifth month of pregnancy.

The rheumatism developed three days prior to her admission to the hospital. I saw her shortly after admission, and found the following condition: Left knee greatly swollen; complained of great pains in right hand and arm, both of which were swollen. A few days after admission, her left wrist and right ankle became greatly swollen and acutely painful.

She was given large doses of salicylate of soda, which gave her but little, if any, relief. The changes were rung upon the various remedies for acute rheumatism without avail. After July 6 she was given a bottle daily of Benzoated Lithium Water (Sander's). In a few days marked improvement was observed. On August 12, patient was free from pain and able to sit up, the swelling having entirely disappeared from her joints. In fact, she expressed herself as feeling entirely well, though still quite weak.

She has not had the slightest symptom of the disease since. On the 3d ult. she was confined, and has done well since. After taking the Benzoated Lithium Water for ten days, the amount administered was increased to a bottle and a half daily. Very truly yours,

H. C. DALTON.

The next case was that of J. R., aged 35, a telegraph lineman of splendid physique and strength, accustomed to all sorts of hard labor and exposure; is temperate in all things. Had noticed for several months at times that his urine was very high colored, with the brick-dust sediment. He first came to me in January, 1891, complaining of rather severe pains in right lumbar region, which came on suddenly and lasted for about two hours. His urine the day or two before was quite well charged with the brick-dust sediment. The first time of emptying his bladder after the above attack of pain he noticed that it was bloody, and on standing in bottle for a short while, the quantity of blood and mucus would extend half way up the depth of fluid. In a few days this attack passed away under the use of simple medications. Occurring at intervals of two to four weeks, the patient had four more experiences of the above character, except each one was of a decidedly more severe and grave degree, until the last one lasted two weeks, and confined him to his bed. The urine in this attack was to all appearances mostly blood, and, on standing, the entire depth of fluid in bottle was filled with sediment.

From the suddenness of onset of symptoms, the hematuriac, the pain, and presence of gravel in the urine, renal calculi were suspected, and it was decided, after making a fair trial of medication and no results were attained, to operate and remove the stone from the kidney. The Benzoated Lithium Water (Sander's) was selected for the trial. Since using this water, one-third pint three times a day, he has not had another attack, nor has there been the slightest indication of gravel in the urine save in September, 1891. Thinking he was all right, he stopped, in August, 1891, the use of the water, and one day in the latter part of September, 1891, had a touch of his old lumbar pain, and noticed his urine was smoky. At once he began again the use of the Benzoated Lithium Water (Sander's), and is still using it. The presumption is that there is a stone in the pelvis of the kidney which is being slowly dissolved, for otherwise we are at a loss to account for the prompt return of the local symptoms after so long a use of the water, from March to August. The probability is on any other assumption that the stone will be ultimately entirely dissolved.

Experiences, such as prompt relief of attacks of lithiasis, and the numerous concomitant nervous and organic phenomena, have, especially in women, been of frequent occurrence in practice.

The last case we present is that of Mr. N., aged 55 years; a rheumatic for the last fifteen years; occupation as fireman in fire department. Has had repeated attacks of acute articular rheumatism, extending into and involving the structures about joints and tendons to such a degree that the case resembled very closely rheumatoid arthritis. The last attack, and the first in which we saw him, began January 1, 1891, following a very hard night at a large fire. This attack continued with more or less severity up to June 15. He was absolutely confined to his bed, unable to move or bend a foot. There was no regular professional attendance, the patient treating himself by nostrums and etcetera. We first saw him June 18, 1891, and found the man in a miserable state. There was not a joint of his body, save the shoulders and left hip, that he could move; tissues about joints œdematous and thickened; joints more or less anchyloid; skin pale and flabby; muscles soft and relaxed; ankles and all joints of feet immovable, so that toes could not be moved; Carpus and metacarpal joints immovable, and turned to ulnar side; deformities and enlargement of phalangeal joints in both hands; no appetite; continually and freely a sickening, excessively sour-smelling perspiration was present; physically, the man was cowed and despondent.

He was ordered one-half pint of Benzoated Lithium Water (Sander's) three times a day. Diet regulated, bowels kept free, and left with the instructions that in one week he was to report to my office for treatment by static electricity; he was to get there if he had to be carried. In five days his pains had entirely ceased, and he was set up in a rocker; in ten days he was helped down stairs into a carriage and into my office. In one month from day of my first visit he was able to go on duty as night watchman in fire-engine house. This was July 18, 1891, since which time, and up to to-day, he has not lost a single night watch. The sole value claimed for the Benzoated Lithium Water in this case is the relief from pain and further progress of the rheumatic trouble by correcting at once the development and retention of the uric acid in the blood. His remarkable progress in overcoming the re-

sults of the rheumatic inflammation was due to the collateral treatment, static faradization and exhibition of the iodides, as well as the strong mental stimulus of knowing that on July 18, 1891, he must return to duty or lose his place.

Such is the record of experiences and observation which we lay before the reader, and upon which we base our plea for "known and definite quality and quantity in mineral waters." The record is the reason for the faith that is in us. The results attained are our justification in declaring for the honest, scientific, known artificial product, in preference to the dishonest, unscientific, unknown and unreliable so-called *natural* product. The rule, in the use of the latter, is disappointment and failure; in the use of the former, definite, successful results, giving profit and pleasure.

BLENNORRHŒA.

Abstract of Paper read before the Mississippi Valley Medical Association.

BY JAMES J. T. JELKS, M.D.,

OF HOT SPRINGS, ARK.,

Member American Medical Asssociation, Arkansas State Medical Society, Chicago Medical Society, and late Professor of Surgical Diseases of the G nito-Urinary Organs and Venereal Diseases, College of Physicians and Surgeons, Chicago, Illinois.

Ricord's conclusion that gonorrhœa is a non-virulent disease has been relegated to the rear by finding the gonococcus of Neisser. All efforts to produce a blennorrhœa with ordinary pus have failed. Every effort to produce the disease with the discharge of the first stage of the disease where the pus corpuscles are few, succeeds.

The identity of blennorrhœa neonatorum and ordinary gonorrhœal disease has been established.

Neisser demonstrated the gonococcus in 1879.

His conclusions were confirmed in 1880 by Bokai and Finkelstein. These men cultivated the gonococcus and with the pure cultures produced typical urethritis.

Bockhardt in 1883 reported the results of his examinations. In 258 cases he invariably found the gonococcus. He likewise cultivated it and with the culture produced blennorrhœa. Keyser in 64 cases found the same germ.

In 1884 Zwiefel reported that only that pus which contained the gonococcus of Neisser could produce blennorrhœa neonatorum.

Bumm confirmed these statements of Zwiefel.

Sternberg, in 1884, disputed these statements of Bumm, Neisser, Bokai, Finkelstein, Bockhardt, Zwiefel, Willands and many others. With Sternberg we find Sanger, Frankel, Gervanin, M. von Zeisel and Lustgarten, and Mannaberg.

In 1886 Bumm again wrote concerning the coccus of Neisser. In numerous cultivation experiments he demonstrated the presence of this coccus; and with pure cultures of the second and twentieth generation produced, in two women, typical urethritis and in the discharge was found the gonococcus.

This, then, is a demonstration that urethritis is a specific disease.

This specific disease of the urethra is, in a large majority of cases, limited to the anterior portion of the canal.

When the posterior is involved it should be looked upon as a complication and treated as such by cessation of all treatment of the anterior urethra and rest in bed.

You are all familiar with Fournier's celebrated statement as to the sources of infection; out of 387 cases the disease was acquired from regular prostitutes twelve times; and in 375 cases from clandestine prostitution!

Bumm's experiments with pure cultures in the eyes of rabbits has enabled us to follow the gonococcus in its travels. First they multiply upon the epithelium. In a few days they penetrate this layer of the mucous membrane and henceforth propagate within and upon the papillary layer. This process of subepithelial multiplication of the gonococcus for the first two or three weeks of a blennorrhœa is one of great importance to us; and not until the decline of the disease is this process changed to one of surface multiplication. This is a very important fact for us and explains why all our efforts to jugulate the disease have failed.

It is true that surgeons, years ago, used strong solutions of silver nitrate, 20 to 40 grs. to the oz., to abort the disease, and sometimes succeeded; but when they did it was because this strong remedy destroyed the epithelium and hence reached the coccus beneath it; but the remedy was worse than the disease.

Treatment.—I will not go over all the old remedies and modes of treating blennorrhœa, but call your attention to Prof. Stillings' experiments with Merck's pyoktanin. He used it successfully in blennorrhœa neonatorum. Last winter I heard Dr Hotz read a paper before the Chicago Medical Society giving his experience with pyoktanin in gonorrhœal ophthalmia.

By reason of the fact that pyoktanin penetrates the epithelial covering and into the papillary layer, it occurred to me that this was the remedy for blennorrhœa; and I at once instructed the attending staff in the Genito-Urinary department of the West Side Free Dispensary of Chicago to use it.

Upon my return home I commenced its use in my private practice. Some of the cases have gotten well with marvelous rapidity; a few in 24 to 48 hours. Again, others have gained no benefit from the remedy. I am not able to tell why this should be.

On June 13, 1891, Dr. George Wiley Broome, of St. Louis, Mo., read a paper before the St.

Louis Medical Society, wherein he advocated the use of pyoktanin in blennorrhœa. His method was to insufflate the dry powder. My plan has been to use a saturated solution as an injection, retaining the fluid for five or ten minutes and by pressure forcing it down to the isthmus.

I am sure that the treatment of the future will lie in getting some remedy which has the power of penetrating the tissues and hence reach the disease germs.

NASAL GUIDE FOR THE STOMACH TUBE.

BY L. H. PRINCE, M.D.,
OF BATAVIA, ILL.

The forcible feeding of the insane through the nose with the stomach tube is frequently a most tedious operation, and in many instances becomes an impossibility, and resort is finally had to the use of the mouth-gag, so as to allow of the introduction of the tube through the mouth. As the passing of the tube through the nose, in most cases, is greatly to be preferred, the following is offered as a simple and efficient method whereby the tube may, in nearly if not quite all cases, be quickly and easily passed through the nasal cavity and into the pharynx.

Nasal Guide and Stomach Tube in position for introduction.

The instrument used is very similar in appearance to a small-sized urethral sound. It should be about six inches in length over all, and not more than one-eighth of an inch in diameter from the handle to the extremity, the curvature beginning about an inch and one-quarter from the end.

After thoroughly annointing the guide and tube, the point of the guide is inserted into the tube through the fenestra in the side, and passed along until it projects a little beyond the extremity. If the closed-end tube be used, which is not advisable, the point of the guide should fit into the pointed extremity. The tube and guide are then passed together into the nostril, the tube lying above the instrument, the handle of the latter being at first depressed. (See cut.) The tube is managed with one hand, the guide with the other. As the back of the nasal cavity is reached, the handle of the guide is raised, and the tube can then be easily passed down into the œsophagus, the guide being withdrawn as the tube passes over the soft palate.

The proper manipulation of the tube and guide may be easily acquired with a little practice.

CATARACT. HOW SHALL WE DEAL WITH THE CAPSULE? NEW CYSTITOME FORCEPS.

BY EUGENE SMITH, M.D.,
PROFESSOR OF OPHTHALMOLOGY AND OTOLOGY IN DETROIT COLLEGE OF MEDICINE; EX-PRESIDENT OF SECTION OF OPHTHALMOLOGY AND OTOLOGY, AMERICAN MEDICAL ASSOCIATION; OPHTHALMIC SURGEON TO ST. MARY'S HOSPITAL AND FREE EYE AND EAR INFIRMARY, ETC.

Local anæthesia (cocaine) and antisepsis have been the means of producing a great revolution in the operation of cataract. Eserine, also, plays a somewhat important part. The Graefe modified linear extraction—linear incision combined with iridectomy—which has been so generally adopted as *the* operation for cataract, because of its supposed avoidance of iritis and consecutive destruction of the cornea, easier and better healing of the wound, etc., has, with the majority of the leading ophthalmic surgeons of the present day, been supplanted by simple extraction with a small flap (one-third of the cornea, De Wecker), and *without* iridectomy, a near return to the old classical operation, and the success of the operation is as great or greater than the Graefe method, and is in no small measure due to the use of cocaine, and the removal of all kinds of infectious factors which may exist in the conjunctival sac, lachrymal ducts, hands of operator or instruments, cleanliness and antisepsis being regarded as identical.

The adhesion to the Graefe method by some surgeons is no doubt due to a *fear* on their part, which has arisen from the *history* of the flap extraction as made in the olden time, where the flap, as suggested by Daviel, occupied two-thirds of the cornea, and was so frequently followed by suppuration of the cornea, prolapse of the iris, etc. These fears have been dissipated, with many, by statistics and experience, and I predict that ere many months, thanks to the efforts of De Wecker, Knapp, and others, simple flap extraction will be accepted by *all* ophthalmic surgeons as *the* operation, and the iridectomy relegated to exceptional cases, where it properly belongs.

An important step in the operation is the best means of opening the capsule. This feature is exciting the interest of many operators. Shall it be done with the knife while passing through the anterior chamber, before making the counter-puncture, *a la* Galezowski? Shall it be made with the cystitome, in the shape of a T, or peripherally after completing the flap, *a la* Knapp? or shall we, with a pair of cystitome forceps, extract the capsule, *a la* De Wecker, of Paris?

Each method has its advocates, but in my mind, the *beau ideal* method is the *extraction* of the anterior cap sule.

With the forceps heretofore in use, this has been a difficult procedure, even in the hands of experienced and dexterous operators, because of the danger of catching a fold of the iris between the blades, and the danger of bruising the flap by the necessary *tilting* of the forceps in order to engage their points in the capsule.

De Wecker, who first suggested removal of the anterior capsule, has forceps made with one or two sharp teeth placed near the points of the blades, but on the *under side* of the blades, after the style of the iris forceps of Leibreich and Mathieu. Knapp modified with more teeth and a slight separation of the blades to prevent catching and bruising a fold of the iris, the points of the sharp teeth being slightly directed downwards or backwards, to better seize the capsule, but owing to the necessity for tilting the blades backward into the pupillary space, their use for this purpose was nearly or quite discarded. Experiencing these difficulties, I sought to overcome them, and have succeeded to my own satisfaction, as I have demonstrated by their use in private, and before my class, in many cases.

My first forceps were simply a modification of Knapps, with four fine, sharp teeth on one blade and five on the other. These I further modified by having three teeth and four teeth only, and having *only the points of the teeth* sharp, that they may sink into and *tear*, not *cut*. The principal modification, however, is the curving or dropping downwards of that portion of the ends of the blade which contains the teeth, below the plane of the blades, that the teeth may set down into the pupillary space *without tilting* the forceps. The forceps being introduced closed, as for iridectomy, the end of the forceps is pulled forwards till the curved portion, containing the teeth, is in the pupillary space, when the blades may be allowed to open to their full extent beneath the pupillary border, and by gentle pressure against the lens, the capsule is seized and more or less forcibly (within reason), by a little sudden twitch, extracted. The curve where the teeth are dropped is 1 mm. in depth, the part containing the teeth is 2 mm. long, the blades open automatically 5 mm., and the blades when closed, except that portion containing the teeth, are 1½ mm. apart.

The forceps are most admirably made by Shepherd & Dudley, of New York, and the accompanying wood-cut affords a good general idea of the instrument.

130 Lafayette Ave., Detroit, Mich.

SUBSTITUTION AND ITS ATTENDANT EVILS.

BY JOHN AULDE, M.D.,
OF PHILADELPHIA, PA.

The evils attendant upon substitution and sophistication of remedial agents have long been surmised; they have not, however, until recently, received attention at the hands of the medical profession. Increased diagnostic skill, along with greatly improved facilities for the manufacture of medicaments, favor an approach toward mathematical exactness in computing therapeutic results. When these are wanting we challenge the character of the remedy. The question which presents itself is: Has our patient received the true medicament or a base counterfeit? However attractive in theory, it will be found impractical for the medical profession to drift away from the pharmacists, and it should be our aim to reward the faithful and bring the guilty to punishment. The friendly bond between the two professions should be honesty, as neither can afford to work independently; there is an interdependence which makes them mutually helpful.

It is said of Lawson Tait, that he has returned to first principles, and carries a mill with him, so that when ergot is needed, he prepares it fresh with his own hand. The reliable character of Squibb's ether has been maintained through his business sagacity in having it prepared chemi-

cally pure and distributed all over the world in sealed cans, thus precluding the possibility of sophistication or substitution.

The life of a patient suffering from rheumatism may depend upon his being supplied with sodium salicylate prepared by a combination of Merck's chemically pure bicarbonate of soda and true salicylic acid obtained from oil of wintergreen, and yet few pharmacists, even in large cities, pretend to keep either in stock. They are the exception in Philadelphia, and doubtless the same is true of other cities.

Some years ago Dr. Squibb, of Brooklyn, set his seal on Marchand's peroxide of hydrogen, by endorsing its character and defending its merits as the most powerful and yet harmless bactericide which could be employed in the treatment of various formidable and fatal diseases. Dr. Robert T. Morris, Dr. Paul Gibier, and other well known authorities have corroborated his statements from clinical observation, and as a consequence, a revolution has taken place in our methods of treatment in both medical and surgical practice. The efficacy of this simple remedy, its innocuousness and extended field of application, have shed a flood of light upon modern therapeutics, but at the same time there has followed in its train a host of worthless imitations.

The substitution of the commercial for the medicinal peroxide is calculated to work serious injury and destroy our confidence in a most potent remedy. In the treatment of diphtheria, for example, the commercial product is positively harmful. When death results, shall we blame the attending physician or the unscrupulous druggist who substitutes a base imitation for the genuine product? And still, pharmacists who claim to be respectable, do not hesitate to trifle thus with human life. Is it any wonder then, that our mortality percentages are on the wrong side?

Cascara sagrada has been counterfeited and sophisticated until it is almost impossible to secure a reliable preparation of this most useful medicament, although Parke, Davis & Co., the pioneers in its introduction, have adopted every means in their power for the protection of the medical profession. Antipyrin, a patented preparation, has met with phenomenal sales, and possesses distinct therapeutic properties, and as a result, imitations and substitutes are offered to take its place in medical practice. Whether these imitations are better or worse than the original product, I do not care to discuss; neither is it for the druggist to decide. The decision here, as to any special remedy or preparation, rests entirely with the physician, as he alone is responsible for the condition of his patient; no one else, not even the druggist, should be permitted to interfere with his directions. Substitution is an evil which should be guarded against; it is an evil which must be eradicated, or the entire medical structure will collapse. It is a duty we owe to ourselves and to our patients to look after this unnatural condition of affairs in which we are so vitally interested, and the time is near at hand when a systematic effort must be made with a view to accomplish the desired end.

This subject is commended to the attention of the American Medical Association, with the suggestion that a committee be appointed who shall recommend suitable measures for the protection of the medical profession from the evils of substitution and sophistication on the part of unscrupulous pharmacists. Shall we have a "list?"

4719 Frankford Avenue.

KANGAROO TENDONS.

[At the annual meeting of the Association of Obstetricians and Gynecologists, held in New York in September, in the discussion upon suture material, Dr. Henry O. Marcy, of Boston, advocated the use of kangaroo tendons, and the interest in the subject is so general, that we reprint the following from the volume of Transactions now in press.]

I take pleasure in exhibiting, at the request of some of the Fellows, samples of kangaroo tendons, in the condition in which they are sent to me from Australia. It will be noted that this animal has the tendon of the tail disposed in a bundle of parallel fibres, running its entire length. These vary in size, dependent upon the size and species of the animal. As will be observed, they are easily separated into even, smooth, round strands of uniform size. Those from the species called the wallabee are preferable, since the size of the tendons is that more commonly desired for the suturing of wounds. They vary somewhat in length, averaging about 20 inches. I have carefully studied the tendons of every animal which I thought could furnish the material suitable for sutures.

The Indian of the Northwest still uses as thread for domestic purposes the fascia lata of the moose, which is sun-dried and maintained dry until wanted for immediate use. It is not unlike the fascia lata of the buffalo, which from time immemorial, until quite recently, has furnished an ample supply. It is almost identical with that of the reindeer of Northern Europe, which is still largely in use there as a suture. Tendons of this character have furnished me, in part, suture material for surgical purposes for the last ten years. They are, however, very inferior to kangaroo tendon sutures. The only other animals which I know that have tendons similarly disposed are the common rat, the squirrel and the opossum.

Dr. C. E. Mastin, of Mobile, sent me recently specimens from the tail of the opossum which

furnish excellent suture material, but they are, unfortunately, only 10 or 12 inches in length.

I sent to Australia more than ten years ago for a supply of tendons from the tail of the kangaroo, inferring from the relationship of the species with the squirrel and opossum, that the tail of this animal should furnish similar tendons, and of course much longer and larger. It has been only after many and repeated efforts that I have been enabled, within two or three years, to secure a supply much in excess of my own immediate requirements. In earlier years I have paid any price demanded, even in Australia, 60 cents per strand, by the hundred. However, an arrangement has been recently effected, by which an ample supply may be obtained for furnishing the entire profession with reliable tendons. They are prepared ready for use, under my own personal supervision, at a cost of $10 per hundred. These are kept by Messrs. Codman & Shurtleff, the well-known instrument makers of Boston, from whom they can be obtained, or, if preferred, by sending directly to me.

At this price the cost is not much in excess of well selected and properly prepared catgut, to which it is in every way greatly superior.

The tendons are taken from freshly killed animals, are quickly sun-dried, and kept dry until ready for preparation. They are then soaked soft in a sublimate solution (1–1,000), carefully separated, sorted, and quickly dried. They are then immersed in ether for twenty-four hours, although this seems hardly necessary, as they seem to be absolutely free of fat. After this they are chromicized and permanently put up in a solution of carbolic acid (1–10), after the Lister formula for the preparation of catgut. They should be retained in the carbolic oil until required for use, then wrapped in a towel, wrung from a 1–1,000 mercuric solution, for a few minutes, which makes them supple and easy of application. They do not soften and swell as catgut similarly treated. It must, however, be remembered that every precaution of modern surgery is demanded in placing *aseptic* buried sutures *aseptically* in *aseptic wounds*.

I have experimented in the preparation of suture material, in the various ways advocated by a number of authors. I have found none so trustworthy as the chromicized suture, permanently kept in carbolic oil. I quite prefer not to use it until after it has been prepared for six months and it appears to improve with age. In the larger sizes, in well sterilized tissues, it can be demonstrated after three or four weeks, and a marked thickening of the tissues is observed along the line of the buried sutures for a considerable period longer.

Catgut has many defects, chief of which is that, for days together, the intestines of the animals, from which it is made, must remain in a state of active putrefaction, in order to separate the connective tissue sheath from the other coats of the bowel. This is then subdivided as required in size, and twisted into a thread, the ordinary catgut, or violin strings of commerce.

The sterilization of this material, so as to render it safe for sutures and ligatures, and yet not injure its integrity, is by no means easy. As has been shown by many observers, the larger sizes especially of catgut, prepared for surgical use, contain bacteria capable, under favorable circumstances, of reproduction. This is doubtless the most valid reason why catgut, as suture material, has fallen into disuse.

When its histological elements are investigated, it will be seen that its ultimate fibres cross each other diagonally to the long axis of the bowel. This is an admirable disposition to allow of the ever-varying size of the intestine, but it is little suitable for the purposes of great strength and inelasticity. The illustration is not overdrawn in the comparison of the attempt to make a strong cord by cutting the finest woven fabric upon the diagonal and twisting it. So great is the strength of the connective tissue of animals that catgut, when kept dry, is capable of resisting great strain, as in the high tension of musical instrument strings. But, when macerated, a softening process which must take place in the tissues of the body, the catgut unfolds and becomes a soft, elastic material. This explains why, in the interrupted suture, the knot is so untrustworthy. The tendons proper of animals have their fibres uniformly disposed in parallel lines, and as a consequent, when moist, are many times stronger than the same size of catgut.

Under the most favorable circumstances, sterilized silk sutures disappear far too slowly; and for this reason, if used in any quantity, must generally be applied in a manner to permit of removal. When buried within the tissues, they are more generally encapsuled, rather than absorbed, and often, even after many months, produce irritation and are thrown off as a foreign body.

A properly prepared, aseptic animal suture, buried aseptically in healthy tissues, slowly disappears, and, as histological studies abundantly prove, they are replaced, in large measure, by connective tissue cells, making a band of living, constricting, or supporting structure, which surrounds the included part.

This is of the highest importance in the ligating of large vessels, and of almost equal value in the supporting of many of the structures coapted in wounds, as, for example, in hernia, the repair of the perineum, etc.

I am certain that one of the greatest advances in modern surgery is found in the immediate coaptation of all well vitalized aseptic wounds, hermetically sealed without drainage. For this purpose, the tendon suture is the ideal material,

and I hazard very little in predicting that, at an early date, the clumsy, bungling method of closing wounds with interrupted sutures, at best liable to infection and subsequent danger, will be relegated to history, and the tendon suture will become an indispensable factor in wound treatment.

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

First Annual Meeting of the Electro-Therapeutic Association, held in Philadelphia, September 24, 25 and 26, 1891.

(*Continued from page 806.*)

FIRST DAY—AFTERNOON SESSION.

Dr. A. D. Rockwell, of New York, then read a paper entitled

ELECTRICITY IN AMERICA,

dealing more especially with the earlier work of his late associate, Dr. Geo. M. Beard, and himself in developing the field of electricity in medicine, and in securing for it professional recognition. He said that twenty-five years ago electricity was but another name for quackery, and to devote especial attention in that direction was a plea of guilty to the grossest ignorance and fraud. As an illustration of this, he referred to the fact that when he first ventured to present for the consideration of the Medical Society of the State of New York a paper on the Medical Use of Electricity, an eminent physician on the committee exclaimed, What! is he regular? The whole subject at this time was a veritable *terre incognita*. Medical journals seldom referred to it in any way; it was not mentioned in our schools, and of American literature along this line there was substantially none. Electricity was known to be of virtue in stimulating muscular contractions, and paralysis was the main, if not the only, disease in which this agent was especially indicated. Abroad, localized electrization had been worked up by Duchenne, Remak and others, and in proportion as their knowledge in regard to the whole matter was limited, in just that proportion were most of the followers of these two leaders dogmatic in the assertion of their beliefs.

One party preferred the galvanic and another the faradic current, and a long and unreasonable controversy arose, mainly in reference to the question whether the better therapeutic effect was obtained by applications to the motor points or to the muscles themselves. When, therefore, Dr. Rockwell and his associate, Dr. Beard, asserted and demonstrated that electrization was something more than a mere stimulant; that it was a tonic of very remarkable efficacy, and as such was indicated in a wide range of diseases associated with debility and impaired nutrition, the medical press here and elsewhere gave to the subject the most careful consideration.

In Germany especially, through the careful *résumé* of Prof. Erb, of Heidelberg, the ideas advanced were received with much interest and appreciation. Dr. Rockwell referred at some length to the methods of general faradization and central galvanization, the revival of the use of static electricity, and the use of electricity in gynecology in this country.

He laid especial stress on the value of electricity in the treatment of extra-uterine pregnancy—a suggestion entirely American, and deprecated the prejudice that decried the method in those early cases where it was applicable, in favor of the knife. He regarded the future of electro-therapeutics as assured, and remarked that the tardy fulfilment of the promises of its youth had been due not so much, perhaps, to the prejudice of men of science, as to the necessary mechanical difficulties in the way of its employment, and to a want of knowledge of the indications for its use and the method of making the applications.

Dr. Morton: If no one is going to say anything, I rise to express the general feeling of pleasure we have in this historical account of electro-therapeutics, of canonizing that period which electro-therapeutics in this country has passed through, and its various manifestations in France and Germany. I recall, at about the same time you speak of, the work of Golding Bird, Wilkes and others. That of Bird of 1840 is still a very remarkable work, and will repay reading by any one. His results were very remarkable.

While on my feet, and although I rose simply in recognition of the great merit of Dr. Rockwell's paper, and acknowledging there is little to go over in his paper, as his statements are very general in their nature, I will in the most courteous nature, say that his placing so much emphasis on general electrization is not what we are after. We want to localize and specify treatments. I see no more reason to attach a particular name to general faradization than to general bathing, or anything which helps health in any way. I think in regard to central galvanism that the reader should be more definite in his statements as to the conditions in which central galvanism is most applicable.

Dr. Blackwood: I have operated on thirteen cases of extra-uterine pregnancy, each of which has been diagnosed by at least one eminent gynecologist. The reason why I prefer faradism, which I use instead of galvanism, is on account of its peculiar action. It acts on the muscular fibre, and it appears to me to be of the same nature as the current in electric lighting. Up to

the last seven months I had no particular proof of my supposition, but as I had always used the faradic current, I have taken special pains to observe its action, and in gaining facts to support my theory. I have some very interesting experiments which I have performed, besides one or two specimens, and I have thirty products of conception, all of which are not more than three months, and so far as my judgment is concerned, I think I am correct as to the mechanical effect of the two currents. That is, the faradic does destroy the integument. I use the faradic current for one hour, and endeavor as far as possible to get the embryo as closely in the embrace of the electrode as possible. After using the faradic I then use the galvanic, 70 to 100 milliampères. I use galvanism for absorbing the foreign body, as our opponents claim it. I say this without the slightest idea of criticising the gentlemen who have spoken, and in order to combat what may seem adverse criticism, I wish to say that for the last ten years I have obtained the best results from the central treatment, and I think it is the best way to overcome obscure nervous affections. But I often depend on localized treatment as Dr. Morton has claimed, and I think we get good effects from both central and general methods.

Dr. Rockwell: I cannot see why Dr. Morton's remarks apply, I only believe that the doctor has had very little practical experience in following out the methods which I and others have found of the utmost value. Why we should not have a certain name for a certain method, to indicate what it is, I can't see.

Augustin H. Goelet, M.D., read a paper on

THE ACTION AND APPLICATION OF THE FARADIC CURRENT IN GYNECOLOGY.

In presenting the paper, the author said he desired that the discussion would throw more light upon the subject, which was surrounded with much uncertainty and obscurity. The action and application of the faradic current in gynecology was, to his mind, one of the greatest problems of the day in medicine. The literature of the subject was, unfortunately, exceedingly confusing in regard to many important points in connection with this current as derived from the secondary coil. This was regarded as particularly unfortunate, because the faradic current was a therapeutic agent of too much value to be neglected or discarded, as it has been by some of the workers with this agent. He regarded the imperfectly constructed apparatus as the cause of the indifferent results which have been obtained by different experimenters. The construction of secondary coils has heretofore been looked upon as such a matter of indifference by physicians who use them that the manufacturers, having no guide for their construction, have suited their own convenience in the matter, regardless of any physiological effect to be derived therefrom. In consequence these coils, in the ordinary apparatus, will be found to vary from No. 15 to 26 wire, and from 60 feet to 200 yards in length. Experience had led him to declare that the faradic batteries of ordinary construction are totally inadequate for gynecological work, and satisfactory results cannot be expected from their use. The uncertain statements of manufacturers regarding the length of the wire composing their secondary coils, led him to advise those who desire to be accurate, to measure the resistance of their coils, and calculate the length for themselves, instead of depending upon the statements of the makers. The Englemann battery, with three different secondary coils, he declared to be the only reliable apparatus suitable for gynecological work manufactured in this country. In this the coils are arranged as follows: The secondary coarse wire coil is of No. 16 wire, about 75 yards long; the intermediate is of No. 22 wire, 225 yards long; and the fine wire coil is of No. 32 wire, about 660 yards long. Though these coils were to be regarded as a great improvement upon others, they do not wholly meet the requirements of gynecological work, since very sensitive conditions cannot bear the current from his finest coil. Therefore the following arrangement was suggested, viz.: One spool should contain 1,500 yards of No. 36 wire, which if tapped at 1,000 yards would give two additional coils, one of 1,000 and one of 500 yards in length. Then another coil of No. 32 wire 800 yards long, tapped at 500 yards, would give a coil of that length, one of 300 yards and another of 200 yards. Then another coil of No. 22 wire, 250 yards long, to correspond with Englemann's intermediate. There should also be a coarse wire coil of No. 16 wire, about 100 yards long. By this arrangement practically eight different coils are secured, and a corresponding variation of the current, there being but four spools. It would be possible by this arrangement to treat very sensitive conditions, which could not be approached with the other coils.

Arguments were adduced and experiments given, showing conclusively that there is a marked difference in the effect of the current as derived from coarse and fine wire secondary coils, and also in different lengths of the same size wire, which has been denied. The current from the coarse wire coil was declared to be a current of volume or greater ampèrage, as distinguished from that of the fine wire coil, which is a current of tension or greater electro-motive force, the former being useful for muscle stimulation and the latter for nerve sedation. The failure to obtain satisfactory results with this current was attributed to the imperfect and variable construction of apparatus by different manufacturers.

The use of a rheostat or controller in the secondary circuit, it was declared, did not sufficiently vary the physical conditions of this current to make one coil suitable for all purposes, as has been claimed.

The construction of the vibrator or current breaker was regarded by the author as a point of much importance. This device upon the ordinary faradic apparatus produced interruptions entirely too coarse, and the movement is uneven and irregular. He called attention to the fact that for producing sedation from the fine wire coil, a maximum rapidity of interruption should be obtained, and that there should be not 50 or 80, as is usually the case with the ordinary apparatus, but 100 to 200 per second. Coarse interruptions are more stimulating and irritating, and fine interruptions are more sedative. The importance of using coarser vibrations for the coarse wire coil and finer vibrations for the fine wire coil was emphasized. The current from the coarse wire coil is used for muscular stimulation, and that from the fine wire coil for sedation. In applying this current for stimulation for the muscle, it is desired to produce an alternate contraction and relaxation which will resemble the normal physiological action, and the interruptions must be slow, so as to allow the muscles time to respond in a normal manner. That is, sufficient time must be allowed between the interruptions to allow the molecular changes to take place. Slow interruptions permit contraction and relaxations to occur, and the normal physiological action is closely imitated. In effecting sedation, it is desired to paralyze the sensory nerves and wear out and relax the muscles, thus relieving the painful contractions, and the interruptions must be fine. When the interruptions are rapid, the muscles are unable to respond to every vibration, and constant contraction or a tetanoid condition is produced, which eventually wears out their contractile power, and consequently a condition of relaxation is produced if the application is continued long enough. Likewise this constant and intense stimulation of the sensory nerves results in a temporary loss of their power to respond, and a condition of anæsthesia is brought about, which is more or less prolonged according to the duration and frequency of the applications. Attention was called to the fact that sedation was secured by a prolonged application of the current, from ten to twenty minutes. The duration of the application of the current from the coarse wire coil should be limited to five minutes. In all applications where sedation is desired, the strength of the current must be increased very gradually without jerk or shock, and it should be decreased in the same manner.

The effect of the current upon the vaso-motor nerves and the capillary circulation was also referred to, and it was claimed that thereby blood stasis is relieved, and the absorption of effete products is hastened.

The polarity of the faradic current was insisted upon. Though usually regarded as a to and fro current, it is certainly endowed with polarity, since experiments show that there is a distinct difference in the physiological action of the two poles. This, it was explained, is due to the fact that through the high resistance of the human body, only the break current had a perceptible action, the make current being cut down to such an extent by self-induction as to make its action inappreciable as applied to human tissues. Hence the faradic current, when used upon human structures, may be said to flow in one direction, and is not an alternating but an interrupted current.

Attention was directed to the fact that the best effect of the secondary current is obtained only when the secondary coil completely covers the primary; that is, when the whole of the secondary coil is receiving the full amount of induction. In order to secure this from the beginning of the application, and at the same time make it bearable to the patient, a rheostat or regulator is placed in the battery circuit. This regulator is composed of fine German silver wire, of proper length to afford sufficient resistance to operate six Leclanche cells arranged in series. It is a very simple device which gives the operator perfect control of the current, and allows it to be graduated to suit any case. The increase or decrease of the secondary current is regulated by increasing or diminishing the strength of the current in the battery circuit by means of this regulator, which interposes a variable resistance. The method of operation consists in applying the electrodes with the secondary coil removed from the primary, then allowing just sufficient current to flow through the regulator in the battery circuit to operate the vibrator smoothly but feebly at first, and the secondary coil is then slowly moved up until the primary is completely covered. The strength of the current is still further increased by allowing more current to flow through the rheostat or regulator until the desired intensity is reached. Applied in this way, the very best effect of the secondary current is secured from the beginning of the application, and the most sensitive conditions may be brought under its influence, such conditions as could not possibly be treated in the ordinary manner with the best effect.

The clinical capabilities of the faradic current as derived from properly constructed apparatus, and the therapeutic indications, he thought could be readily inferred from what had been said, and it was, therefore, unnecessary to go into details regarding the respective indications for sedation or muscle stimulation. The different physiological effects of the interrupted induced current as derived from differently constructed coils being

recognized, the way is comparatively clear. It was, however, stated that acute inflammatory process was amenable to treatment by this current under suitable conditions of high tension, as when it is derived from a coil of very fine wire of great length, if a maximum rapidity of interruptions with perfect smoothness is secured, the effect being obtained by restoring the equilibrium of the circulation.

President: Before the discussion on the paper just read, I wish to announce that there will be another meeting to-night at 8 P.M. The paper is now open for discussion.

Dr. Bigelow: It is rather difficult to make a discussion of such an elaborate paper as this. I, in my writings, time and time again, and in a book recently published by me, brought out the distinction between primary and secondary coils, which were first insisted upon by Duchenne and at Apostoli's clinic in Paris. I am not a sufficient physicist or mechanic to go into the physical aspects of the question, for there are such questions. Clinically speaking, there is a very marked, decided and important difference between primary and secondary currents. The current from the secondary in all cases of ovarian troubles is the only current which will be tolerated. I have seen cases of ovaritis, characterized by very persistent and aggravated pain, yield at once to applications of the secondary current. I have seen it aggravated to a degree unbearable by the primary current. I have twice, in some of my experiments lately, seen it yield more rapidly to the static, which is more like the faradic. The feel of the secondary faradic is very pleasant, and from my experience in gynecology, as a sedative it is very marked. It is not used as much as it ought to be, although it is much more used now than formerly.

Englemann, of Germany, has had some remarkable results in the use of this current. It is a much less muscular stimulant than the primary. You do not get any perceptible effects from the secondary coil on the muscular system, so that it seems to me that there should be a distinct and decided difference between the two coils, depending upon the manner of generation, as it is entirely different. With all the facts in these cases before us, in cases of pain in fibroid tumors, and in conditions of intra-uterine fibroids, I think the faradic current is the best.

Dr. Hayd: I am sure that every one has had great pleasure, and has derived very much benefit, from listening to this valuable paper. Those of us who have had clinical experience are satisfied that the faradic current is sedative in its properties, and the question now presents itself, How can we get the sedative properties necessary in our ordinary practice? Those of us who have used the currents with the purpose of getting muscular contractility have found that the womb does remain contracted permanently. To make this applicable in acute conditions, as in acute reflexes, and where there is extreme sensibility, and where, after one application, so much relief has been given that the woman could go to work and attend to her other duties.

There is one good thing which is suggested to me from Dr. Goelet's paper, and that is this, that the president should appoint a committee of three who are sufficiently qualified to make tests on this subject, to study and observe results, and report at our next meeting their experiences with the differences of the coils, and by that means we will be able to make a standard rule whereby these faradic applications can be made. I do not know that there is any particular difference between the two poles of the faradic battery physiologically; there may be, but I am satisfied we can relieve pain from either pole, whether positive or negative, and whether one has a more sedative property than the other I do not know. The longer I use the fine wire, which I saw used while in Paris, the more I am satisfied the fine wire is capable of giving relief; and yet it is only about 320 yards in length; another was 1,000 yards long. That it would enable us to go into acute conditions where at present I am afraid to go I can't say.

Although I find that it is a great sedative, my experience suggests that it is also capable of doing great mischief. Take it in sub-acute inflammation: I have lighted up inflammations and made great trouble by a weak current of a few minutes' duration. As I speak I recall a young woman of highly nervous organization, delicate fibre, delicate skin, long eyelashes and eyebrows. She complained of some pain, and, on examination, there was tenderness in both inguinal regions. Her temperature was not more than 99½ at any time. After three or four days' treatment with ordinary hot douche and bromide of potassium, I resolved to make an application of the faradic coil. I relieved the pain somewhat, but after a while she suffered a good deal, and that night I made an examination, and I detected a swelling, which gradually increased in size, and there was, at the end of three days, a great mass filling up the posterior cul-de-sac. And I made up my mind I had developed a hematoma.

Dr. Hutchinson: I am exceedingly in favor of the secondary current of Faraday. All I know of the faradic current was learned from Duchenne, and that is probably why I use it, as I adopted his ideas to a large extent. So much do I believe in the secondary current, that I have a large coil of some miles of wire, made so that the primary current can be reached, and the secondary coil is an enormous one. It is tapped at various points, so that it can be increased or diminished in force at will.

I do not find, and I have not found in a good

many years of practical work, as Dr. Goelet says, any difference in the faradic effects of one pole or the other. I do not know of any. I do not get any difference in the effects or in the results even with the use of this great secondary coil. Sometimes I use as much as a mile of wire, and have used more in cases of anæsthesia. I do not find any difference between the poles. What is done in gynecological work I do not know, but that is the practical result of years of use of this great coil, as far as the negative and positive poles are concerned.

I believe that a certain number of feet or yards of wire have a different effect on the circuits through which it connects. There is no question about this. There is none in the induced current. I do not believe it can be made with the utmost force of the great Rhumkorff coil which I use. In the coil which I use you can get a great spark twenty-four or twenty-five inches in length, and that, of course, means great force.

Dr. Von Raitz: I don't exactly understand your paper. Do you intend to produce a secondary current for sedative effect?

Dr. Goelet: Some speakers have misunderstood me. Take a battery where the secondary coil is movable. Dr. Bigelow has spoken of the secondary coil as the primary. In gynecology I seldom use the primary coil, and have alluded only to the two coils above the primary, both being secondary coils, the coarse wires being stimulant and the fine wonderfully sedative.

Dr. Von Raitz: What I have done in gynecology I have tried to get a real basis for. I have applied the currents to the living and dead body, and have analyzed cases as they have presented themselves. From what Dr. Goelet has said, there is no doubt but that the faradic current has an analytic effect on tissue, and if you look for a reaction, the positive pole shows some acid reaction and the negative alkaline reaction. If that is the case, and there is no doubt of it, and if the faradic current is not properly used, much mischief can be done. That is because there is an effect in the faradic current, and it is no play work.

I have had a patient I treated for ovarian abscess and some pelvic adhesions. I wanted to find out what the faradic current would do, and I have experimented some time and improved her condition, but not sufficiently, and then I went to the constant current. The faradic primary current has a stimulating effect. The secondary current, the finer the wire and the quicker the vibrations, the greater the analytic and sedative effect. But at the same time the faradic current has an analytic power to a less degree, but in some acute inflammations it should not be used at all.

Dr. Walling: Perhaps some of the effects in these conditions are due to the rapidity of the vibrations more than to the coil used. That may be so, however. My own experience in using the secondary coil is to throw the whole coil in and take my current from the rheostat, and I have found that this is the better plan. I get better effects from it than I do by attempting to take a part of the coil, for there you get the whole effect of the primary on the secondary, and then you gain more from the rheostat.

As to polarity of current, it has been my custom to distinguish between the two, and I think we get different effects. I am open, however, to conviction on this point. I have found, in many cases, at least, the positive to be more sedative in its character than the negative, yet I believe both will relieve pain.

Dr. Morton: The paper suggests a great many points, and is difficult to discuss, but I will confine myself merely to one or two points which relate to the polarity of currents and the effects of the current according to the lengths of the wires. I wish first to make this point, that there is a good deal of misunderstanding in our talk about the faradic current. We say faradic current, and we don't make plain in that instance whether we are using the interrupted or the alternating current; that is what we should clear up before questioning the difference between the currents. The primary is an interrupted, and we speak of both as alternating currents, and we should make a distinction before giving the subject further discussion, and confine ourselves to the point referred to by the reader of the paper. Is it to make a distinction between primary and secondary currents and finer and coarser wires? I should be very glad if a motion is made directing tests, so that manufacturers could be instructed how to make a standard induction battery, a standard coil, a standard length of wire, and then we would be on a standard basis to begin clinical studies. And that brings me down to what I want to say respecting the different effects, as reported by different observers. There has been the greatest difference in the character and length of the secondary coils. There is our friend from Providence who uses a mighty Rhumkorff coil and gets no polar effects; and there is our friend from New York, with only a short wire, who gets effects. I think they are both right. There is a difference in construction. As Dr. Goelet points out, as you increase the number of coils, you increase the voltage and force. A current which has a section of two, three or six hundred turns is entirely a different matter. As Dr. Gordon says, in his careful measurements, the induction current, the secondary current of the break, measures thirteen times more in intensity than the same current of make. So we see that the make of the primary exerts its entire influence in charging the coil of the secondary. If the

current of the break is thirteen times greater than the current of the make, than one of those impulses is thirteen times stronger than the other. You can see one end of the line will do thirteen times more electrolytic work than the other; but I do not agree with the reader of the paper that the current intensity of the make is not sufficient to penetrate the human tissues. Here is an interesting point. If the electro-motive force of the make secondary is not sufficient to penetrate the human tissues, we are not treating disease by the alternating current at all, but the interrupted current, which gynecological men do not use at all, and it all comes back to this same point, that we must have a standard induction coil. I can go to an instrument maker and have him make me two hundred turns in my secondary coil which will give me an interrupted current, and not an alternating at all, so the whole question simply resolves itself into the construction of the secondary coil, and before any clinical observations are made, which are bound to be contradictory as the mechanisms are different, I think there should be some uniformity as to the kind of machine to be used electrically.

Dr. Waite: Speaking of faradic coils, as Dr. Goelet has remarked, all manufacturers have made them to suit themselves, and they make them to make as much noise as possible. I am inclined to think to get at the proper coil it is necessary first to make a proper primary and then a secondary. The number of vibrations has a great deal to do with the sedative effect of the primary current, for the reason that if you have a slow vibration you only have a small number of impulses, but if it is very rapid you have a large number, and in that way you have as many times more electrical currents as vibrations. It would be a good plan for a number of physicians to investigate the matter and decide upon such a coil as would fit, both in the external dimensions of the primary and the size of the soft iron core, and also the size and length of the secondary coil, and it can be only done by experimentation. There is no rule laid down for making coils.

Dr. Massey: This problem is of a technical character which interests us as practical workers very much. Very little can be done until we get a meter to measure the faradic current, for the whole question at the present time is in much the same condition as was the galvanic current prior to the invention of the milliampère-meter. You all remember the absurd discussions we heard when we were ignorant as to the relative value of large and small cells and a small and a large number of cells, all of which were buried very deep when the meter was devised. So here I say if we can know what we are talking about we could discuss it intelligently, and we cannot know until we have a meter to measure the faradic current.

The paper of Dr. Goelet was exceedingly interesting and showed a remarkable grasp of the subject. He surprises me very much, however, when he states that he does not use the primary current. That is a current I discarded some years ago when engaged entirely in neurological work, as I could find no difference except weakness as compared with the secondary. Since I have been using the primary current in gynecological practice, where we have low resistance with large poles, I have found it extremely valuable, and this is simply because it is inefficient if the resistance is high. As Dr. Mortin has pointed out, it is simply an interrupted current. With it I can get marked contractile effects, in myomas, and I get better contractile effects in the abdominal and intestinal walls than when using the secondary. Large poles with a minimum of resistance are necessary.

The variation between the primary and secondary currents used in this way is extremely remarkable. Patients who feel no contraction from the secondary current can't stand one-quarter part we can give them from the primary—why? Partly at least because it is in one direction, but more because we have greater amperage, and we get more amperage provided we have small external resistances and a coarse wire; for after all the differences of most resistances within the coils would matter little when you have two or three hundred outside of it.

As to the effects of a coarse wire as a secondary coil I must plead ignorance; I have not used it. I think Dr. Goelet may have made a good point against me there; for what a current will do with a mucous surface and low resistance is not to be compared with what it has done with high resistance, as in the skin. This question was at one time decided by me against the claims of a coarse secondary coil on account of a failure of such a coil to send a strong current through small poles and the skin of the forearm. This, I acknowledge, was an insufficient and incorrect experiment. The coarse wire had to be carried almost all of the way over the core to produce the same effect as the secondary did with about one quarter covering the core, doubtless on account of the resistance in the external surface. In spite of the grasp of the subject shown by the reader of the paper and the remarks here, I do not feel that this thing can be decided until we can measure our current. We can learn something from what we do in clinical work, but I do not think it will settle the question to get a standard of anything, as we cannot keep standard cells in order. Such standards will be worthless as exact measures with an actuating cell that varies in power from time to time, and I have not yet found a cell that will not.

Dr. Goelet: Dr. Morton expresses very forcibly my idea in bringing the subject forward at

this meeting. It was that we should have uniformity. If we can do that, we can agree. There is no doubt but that the faradic current, as we employ it to-day, is merely an interrupted and not an alternating current. We do not get the effects of the one-thirteenth which Dr. Morton speaks of, but the effect of the plus, that which is in excess the amount of the break in excess of the make current.

As to the remarks made in regard to measuring the current, I believe that Dr. Wellington Adams has invented an instrument to measure the faradic current—I have not seen it, however, —and if he has made it, it is simply to register the surplus of one of these currents over the other. He is not measuring what effect we are producing on the patient, the amount of voltage or amperage, but merely the excess of the break over the make. Still, I am not familiar with his instrument.

Dr. Walling suggests that there might be a more sedative effect in the rapidity of the interruptions rather than a sedative quality, and I drew attention to that in my paper. The more rapid the interruptions the more sedative the effect.

I have said that the primary was not used in gynecological work, because I have not used it, and I do not know of any one except Dr. Massey who has. It is more contractile. Apostoli does not use it, he always uses the fine or coarse secondary and I took my cue from him.

Dr. Massey spoke of not believing in the difference of effects of the two classes of fine and coarse secondary coils. He found that it produced a similar effect when they covered the primary to a different extent. That is, that the coarse wire coil had to be all the way over the primary in order to get the same effect you do from the fine wire coil. Of course that is so. When you have it covering you have less of volume and little force, and in order to increase the force you must slide more over the primary, you expose it more to the influence of the generating cell; therefore to obtain as nearly the effect from the coarse wire coil as you would from the secondary you slide more over the primary, but you cannot get the same effect where the resistances are equal.

If you apply the two currents to resistances like the skin by small electros, one over the hand and another far away at some indifferent point, your current from the fine wire will produce a better contraction than the coarse, as you have more current. Still if you cut down the resistance in the skin and make it little or nothing, as you do when you take both electros in the hand, or as you do in the vagina, then of course the electro-motive force is not so necessary. You do not get the same muscular contractions as with the coarse wire coil.

Dr. Bigelow said he did not think the secondary coil was used very much; it is not, I wish it was; it is too valuable to be lost sight of, and I think it is because it is so little understood that it is not used more.

Dr. Morton has explained clearly my idea of the difference of high resistance coil, and it is not necessary for me to reply to Dr. Hutchinson's remarks.

Dr. Hayd has made some use of this current foreign to my experience. I have not had sufficient experience to agree with him. He claims that in cases of recent injuries you get better effect from the coarse wire coil than from the fine wire coil. Now in this case of Dr. Hayd, he don't know what injury he has produced before using the current. Perhaps Dr. Englemann may have produced irritation. And he claims, in recent venous engorgement, to get more irritation from the fine wire, and this makes plain the case of Dr. Hayd.

I would say that I would like to have some one make a motion to have a committee appointed to make experiments by those who understand and are willing to make the experiments, and find out what kind of apparatus is used. The apparatus which I used I brought from Paris and find it very satisfactory. And I used it for some time, but I have discarded it on account of its causing so much pain. Since I have been using the rheostat I find it better.

I would want a committee to make experiments and get some standard in order to give the instrument makers, and then we want the same class used on the skin as in gynecological work, where we use the high polarity method; we want to know what we want, and the only way to decide it is by clinical experience, and in the absence of any probability of our getting a meter we can get some experience from clinical work. We want to know which coil has a sedative effect and which not. We can then discard the bad and keep the good.

It is a question to me whether we can register the faradic current with a meter. Will we register the voltage or shall we register the volume or amperage? What do you want to register? Must you have a voltameter?

If a committee be appointed to test these points, coöperation with instrument makers who understand their mechanism better than we do, would be of great value. And as the President has kindly invited me to name a committee including myself, I will mention Drs. Morton, Hutchinson and Massey.

Dr. Morton: I think the electricians will get a standard cell as soon as possible. As for measuring the current, I think they will do that as soon as they know how. As to making the tests, I want to know what the committee is to do?

Dr. Goelett: My idea is if we all work with

the same coils and in the same direction, and if we work with the same ideas, the question would be as I spoke in our clinical work, to test these coils, whether in a private or dispensary practice we agree to a certain form of apparatus for testing and test it in our clinical work.

Motion carried as made.

Dr. L. A. W. Alleman, of Brooklyn, N. Y., read a paper on

THE TREATMENT OF CORNEAL OPACITIES BY GALVANISM.

The employment of the electric current in the treatment of diseases of the eye is not new. Yet our knowledge of the manner in which this agent accomplishes its object, of the indications for its employment, and of the results which may be reasonably expected, is much short of that full and accurate comprehension so much to be desired in the employment of therapeutic agents.

I have endeavored to test thoroughly the efficiency of galvanisn, in one class of cases, *i. e.*, opacities, and I invite your attention to a report of my investigations.

After the subsidence of the corneal inflammation which has given rise to the opacity, the eye usually remains for some time in an irritable condition; it flushes easily, and shows evidence of a high vascularity, an increase of nutritive activity in the neighborhood of the scar. Sometimes, vessels are seen running on to the cloudy area; and when this is the case, the prognosis is relatively more favorable.

For some little time the reparative process may go on with much activity, especially in young subjects, the cloud diminishes in density and extent, but more or less quickly, it returns to a condition of normal nutrition; the scar tissue becomes more resistent and the clearing up proceeds more and more slowly, till it finally ceases. In this stage we can often accomplish much by treatment. Such agents as an ointment of the yellow oxide of mercury; calomel dusted into the eye; massage and the like, prolong the reparative process. Sometimes such a radical disturbance as a corneal incision made in performing an iridectomy will favorably influence a case, which has for a long time showed no improvement.

But we finally arrive at a stage where the eye is perfectly quiet and no further absorption of the opaque tissue can be induced.

It occurred to me that in this stage the galvanic current was indicated.

It was a well known fact that it would act as a powerful modifier of nutrition in other parts of the body; why could it not be made to do the same in the cornea?

I believe the reason it had not been more successful, was that when used through the closed lids, the necessarily feeble current employed on the eye could not produce at the site of the lesion sufficient stimulation to bring about the desired effect, and to meet this indication I had an electrode (I wish to acknowledge my indebtedness to my friend, Mr. W. E. Gibbs, M.E., for his kindly assistance in designing this electrode, and arranging other electrical appliances) constructed which I could use upon the surface of the cornea. It consists of a silver bar, 12 mm. in length, insulated, except at the ends, by a hard rubber shell; the exposed surface at the lower extremity is slightly concave, 7 mm. in diameter. The upper extremity carries a thread which screws into a metal collar, allowing the tips to be changed when necessary. The collar is attached to a copper spring, which still further protects the cornea from injury when the electrode is moved in the fingers, and at the time being perfectly flexible, allows the tip to be adjusted to any desired angle, which greatly assists the convenience of application. The spring is fastened to a hard rubber handle, 10 cm. in length, and 1 cm. in diameter, through which a conducting wire is carried to the binding post, at the upper extremity.

In my first experiments, it was my practice to dip the exposed silver tip of the electrode into a bath of metallic mercury, thereby attaching a globule of mercury to the electrode, which would act as a cushion upon the surface of the cornea; but I have now abandoned this expedient as unnecessary, sufficient moisture being always present, and forming rather a better cushion than the mercury.

A battery of Leclanche cells, a Fleming milliampère-meter and a rheostat complete my outfit. The rheostat is a modification of one made by Mr. Barrett. I have found this instrument extremely sensitive and satisfactory.

I use for an electrode upon the cheek, a carbon disc with a short metal handle, which fits into a hard rubber shell. The disc is covered with moist absorbent cotton, held in place by the shell, and is renewed each time the instrument is used. I have this electrode made with a very short handle, to be less in the way of the operator. I place this electrode upon the cheek on the same side as the eye to be treated.

I apply the cathode to the cornea. Before placing the electrode upon the face, I direct the patient to touch it to the tip of his tongue, as this gives about the same resistence as through the cornea, and adjust my rheostat till I obtain the current I desire to use. This seems a necessary precaution, as the cocainized cornea might be seriously damaged, without any sensation of pain giving warning.

The eye being previously well cocainized, I stand behind the patient, whose head is thrown back, and holding the lids well apart with the

thumb and first finger of the left hand, bring the electrode in gentle contact with the cornea.

As a rule, the applications are of three minutes' duration. I usually begin with ½ milliampère from one to two minutes, and gradually increase the strength of the current, and length of the sitting, till 1 to 1½ ma. for three minutes is reached, if the current is well borne.

I have used as strong a current as 3 ma., but the stronger current seems to be no more efficacious, and is very apt to be followed by annoying irritation.

It is desirable to produce with each application just sufficient stimulation to give rise to an increased nutritive activity, and not to overstep the line, and produce destruction of tissue, paralysis of function, and stasis. The condition of a recent scar is reproduced, the conjunctiva becomes injected up to the cornea margin, and fine vessels all seem, during the treatment, running to the scar. This disturbance subsides by the second day, when the treatment is repeated. If the eye becomes irritable, the applications have to be suspended for a time.

The results of this method of treatment are satisfactory in the extreme. The duration of the opacity seems to make little difference in the prognosis. Occasionally an eye is met with which, for no apparent reason, does not bear the current well, and the very mildest treatment is followed by a severe reaction; such cases are rare. The visual results obtained will depend largely upon the position of the cloud. When concentric with the pupil, little improvement is seen till late in the treatment, but when the pupil is covered by the lap of the opacity, the visual improvement is very marked at the outset; this is due to the fact that the scar always clears up from the periphery towards the more dense centre. When the scar vascularizes easily the prognosis is most favorable, however old or dense the opacity may be.

In the small, very white scars sometimes seen in adherent leucomata, it takes a very long time to influence the centre of the opacity, and the patient, who is elated by the marked visual improvement obtained by the first few treatments, becomes discouraged with the much slower progress of the central opacity, but in such cases as have persevered for some time there has been a slow but steady improvement, even in the dense white scars.

I will cite a typical case from a series previously reported:

Case.—Patient, M. F., presented himself at my clinic in the L. I. C. H. Dispensary, May 14, 1889, giving the following history:

Twenty-seven years previously, had lost left eye from an injury. Two months ago, right eye became inflamed and painful. He had evidently suffered at that time from a severe luatitis, which had teft a leucoma covering nearly the entire pupillary area. V. $\frac{6}{200}$, not improved by glasses. He was given 1 ma. for one minute at the beginning, gradually increased to three minutes. June 8, after eight treatments, V had improved up to $\frac{16}{200}$. After some more applications, the current being somewhat increased, 2 ma. for two minutes having been given, vision rose to $\frac{20}{200}$. The eye, which had been somewhat irritable, now became quite severely inflamed, and treatment had to be suspended. The eye had become quiet by August 5, when V. had improved to $\frac{20}{100}$, and by August 27, V. $\frac{20}{70}$ was obtained. Wishing to determine whether or not the treatment was entirely responsible for the improvement, I suspended treatment from this time till October 20, when I found V. $\frac{20}{70}$ as before. Treatment was not again undertaken till February.

After six more applications V. $\frac{20}{50}$ was obtained on March 7, and after eleven more applications, V. $\frac{20}{40}$. The patient received in all three op. average about 1¼ ma. for three minutes, and was improved when under treatment from $\frac{6}{200}$ to $\frac{20}{40}$.

Dr. Walling: I have had some experience in treating corneal opacities, and have had most excellent results from the use of the negative current by direct application.

One case I recall to my mind especially, that of a physician who came to me with opacities of the cornea, interfering very much with his vision of one eye. I have no record of the number of treatments. It rapidly cleared up, and his vision is good. He had been treated by some one who had used the positive current, which had lighted up an old inflammatory condition and made it worse. That would seem to be somewhat peculiar. Where there is an inflammatory condition existing, I make application of the positive pole to the outside of the lid, mild in character—½ to 1 milliampère where it is a chronic condition, then I make application with the negative.

Dr. Massey: I would like to add to my question during the reading of the paper as to what pole the doctor used, that I think the use of the negative pole was wise. To morrow there will be a discussion on the subject of the transference of metals and other substances into the body by means of the electric current, and in dealing with so delicate a part of the body as the eye, we should remember that the positive pole is disintegrated by the current, and that metallic irritation may result. The doctor's experiments and results are very striking, and will be received by the electro-therapeutic world, and I hope by the ophthalmological world, as an epoch making work in the treatment of opacities of the cornea.

Dr. Alleman: I am now continuing my experiments in place of ophthalmic surgery, and with remarkable results, and I feel that there is a field for electric work in my department.

(*To be continued.*)

Southern Surgical and Gynecological Association.

Fourth Annual Meeting, held in Richmond, Va., November 10, 11 and 12, 1891.

(*Concluded from page 853.*)

Dr. Cornelius Kollock, of Cheraw, S. C., read a paper entitled

OVARIAN CYSTS, WITH THE REPORT OF A CASE OF OVARIOTOMY IN A YOUNG GIRL.

He said that the causes of ovarian cyst seemed to be still a question *sub judice* in the minds of those who are most progressive, and who have made the greatest advancement in the science of gynecology. Various theories have been put forth by those of larger experience, who are earnest seekers after truth, and who are patient investigators of all unnatural and morbid phenomena. But no satisfactory decision has been obtained from all the patient and searching investigations that have been made as to the cause of this singular, unaccountable, and sometimes fatal neoplasm, characterized by histological diversity from the viscus of which it is a production. Some of the theories seemed, at a glance, to be plausible, but, upon close study, we find they will not bear inspection.

Case.—Miss C. L. H., aged 11 years, 8 months and 19 days; general health perfect in every particular. Menstruation first appeared about two months before she was 11 years of age, and continued with perfect regularity, never excessive or scant, nor was it accompanied by the slightest pain. Her physique was fine in every way. Though less than 12 years of age, she weighed 135 pounds; was strong and active. Her breasts were as full and large as those of a woman at 35. She was very handsome, had a fine voice, and sang beautifully. She was very intellectual, and stood at the head in all her classes in a large high school. I saw her for the first time on the 9th of January, 1891. The abdomen was greatly distended, but facies ovariana was not very pronounced. I was confident she had an ovarian cyst, and I rather suspected she had two. On the 16th of January I made a section about three inches below the umbilicus, and removed a cyst from each side, the one on the left weighing 12 pounds, and that on the right 7 pounds. A more prompt and complete recovery the writer had never seen from the simplest operation. Union by first intention took place, and the sutures, silver wire, were removed at the end of the seventh day. In twelve days she was up and about her room, and on the twenty-third day after the operation returned to her home, a distance of 200 miles.

It is now ten months since double ovariotomy was done on this young girl, and there has not been the slightest discharge from her of any kind. At each menstrual period there is considerable commotion in the pelvic region, attended with some uneasiness in the head and back, but at each period these symptoms decreased, and the last two were accompanied by no pain whatever. The remarkable physical development in this case still continues. It is now ten months since the operation. She has regained six pounds in weight, weighs 141 pounds, and looks better than before she underwent ovariotomy. This young girl came from the purest and healthiest stock of people in this region. Not an individual on either side was ever known to have any constitutional trouble of any kind. Her mother and family physician, both highly intelligent, say they never knew her to be the least indisposed in any way.

NOVEMBER 11, SECOND DAY—MORNING SESSION.

The Association was called to order by the President at 10 A.M.

Prayer was offered by the Rev. Dr. Newton.

Dr. Thomas J. Moore, of Richmond, delivered an eloquent

ADDRESS OF WELCOME.

Dr. William Warren Potter, of Buffalo, N. Y., read a paper entitled

A MEDICO-LEGAL ASPECT TO PELVIC INFLAMMATION,

in which he said that pelvic inflammations in women have been described, discussed and debated from almost every point of view imaginable, until our medical literature is flooded with articles on the subject, and medical society transactions are teeming and bristling with papers pertaining thereto. So far, however, he had not observed that any one had undertaken to discuss these intra-pelvic conditions from a medico-legal standpoint. It was his purpose to discuss that aspect of the question, taking for his text a case that developed an interesting problem in that respect.

After giving a history of the case, Dr. Potter emphasized the following points:

1. The intimate anatomical relations between the pelvic organs and the larger joints of the lower extremities, especially the hip and knee-joints, render them liable to reflexes.

2. The importance of careful diagnosis at the outset, lest grave errors, and possible disastrous consequences, may result from treatment.

3. The medico-legal bearing that errors of judgment in diagnosis and treatment may have in relation to the patient, as well as upon the reputation of the physician.

THE MEDICO-LEGAL ASPECT OF INTESTINAL SURGERY.

Dr. John D. S. Davis, of Birmingham, Ala., read a paper on this subject. He said many

physicians and surgeons, who condemn all mechanical aids for intestinal repair, know not how to use them, never saw them used; refuse to indorse a resection for gunshot or stab wounds, have been known to go in the witness-box for purposes of condemnation and disapproval, when they knew no more about intestinal surgery than a wild Indian about school teaching.

In these days of specialties in medicine, but few general surgeons have either the appreciation, opportunity or disposition to qualify themselves as expert operators in intestinal surgery, but many—to the discredit of the profession, voluntarily appear in the criminal courts of the country pretending to be such—wise and proficient. One of the greatest professional sins of the day is perverted knowledge of conceited ignorance. It is too often that physicians and surgeons weaken and invalidate their opinions to a greater or less degree, by unscrupulous interest in behalf of those employing them, a fact cunningly turned to advantage for defendants in criminal prosecution, and for like reason may become dangerous to the operators they oppose and envy.

To be able to do a laparotomy for stab or gunshot wounds of the intestines, inflicted with murderous intent, and be able to evade civil and criminal liability, the operator must, 1, be able to show evidence of ordinary surgical knowledge in the requirement of the special operation to be performed; 2, he must possess ordinary surgical ability for doing the special operation to be performed; 3, he must exercise ordinary prudence in performing the special operation to be done, as to time, place, antiseptics, asepsis, assistance, nurses, and after-treatment; 4, he must perform the special operation in an ordinarily skilful manner. Hence, to prevent confusion, it will be good if possible, to determine what constitutes ordinary surgical knowledge, ability, prudence and skill. Upon these depend the whole medico-legal status of the intestinal surgeon, and upon which the expert should be required to depend also. According to the practices and rulings of courts in this country, the word *ordinary*, in its surgical adjectiveness, means that the surgeon shall be capable of and exercise that surgical knowledge, ability, prudence and skill with which a fair proportion of the surgeons of his given locality are endowed, and not that of the highest lights of his profession.

Dr. John A. Wyeth, of New York City, made some remarks on *Ether Anæsthesia*.

Dr. Howard A. Kelly, of Baltimore, Md., followed with a paper entitled *Hand Disinfection*.

Dr. I. S. Stone, of Washington, D. C., read a paper on

THE PEDICLE IN HYSTERECTOMY.

The three principal methods were described and illustrated by colored drawings, showing the arrangement of the pedicle in the abdominal wound. The author claims a revival of interest in the operation, and that there is need for its frequent performance. The statistics are far better now than ovariotomy claimed after it had become an operation of election, and was firmly planted in public favor.

Particular attention is given by the author to tying off the broad ligaments, and the use of the elastic ligature. Sewing the parietal peritoneum to that of the pedicle, in the extra-peritoneal cases, was also dwelt upon.

The method by ventro fixation has given good results in the author's hands, and serves to accomplish two important purposes, viz.: a speedy convalescence, and avoids the disagreeable sloughing which follows the use of the wire clamp. It may also be used in some cases of short pedicle, where the wire may not easily be applied. The methods were compared and statistics furnished, showing that the extra-peritoneal method with wire and pin gave better results than either of the others. That ventro fixation came next, and the intra-peritoneal method last, with a large mortality. A method of closing the capsule over the stump was described, which the author claimed would answer for either *dropping* it, or sewing in the wound—ventro-fixation. In the latter case, the suspensory sutures are placed and the pedicle sewed in and under the lower end of the abdominal incision. Great care is required in closing the capsule over the raw surfaces of the stump, so that separation may not occur. Owing to the peculiar contractile nature of the capsule, care must be taken to leave sufficient length for approximation of peritoneal surface.

The uterine arteries are to be tied in any case when hæmorrhage is likely to occur, and drainage may be required. Besides reference to methods, the author described the process through which the wound passes subsequent to supra-vaginal hysterectomy.

All myomatous tissue should be removed, which can only be effected, in some cases, by a process of reduction of the pedicle. This is very important, as in the operations where a large amount of myoma is left, more time is required for atrophy and absorption to reduce the pedicle to its proper size. Great danger to the patient is apt to follow, where a broad base of the tumor is left, in either method of treatment, because this mass must be disposed of before the patient entirely recovers.

The author had observed a sufficient number of cases to declare that permanent fixation of the stump to the abdominal wall was the rule, where the extra-abdominal methods were used, and especially when the broad ligaments were cut away to prevent traction.

SECOND DAY—AFTERNOON SESSION.

The Association was called to order by the First Vice President, Dr. McFadden Gaston, of Atlanta, Ga.

The first thing in order was the ANNUAL ADDRESS of the President, by Dr. L. S. McMurtry, of Louisville, Ky. Dr. McMurtry selected for his subject

A PLEA FOR PROGRESSIVE SURGERY.

He said within fifteen years the entire practice of surgery has been revolutionized. New methods have been introduced and new regions invaded; comparatively recent teachings have become obsolete in practice, and modern treatises recast. The science and art of gynecology, which a few years since was limited to a small and narrow field, has grown into a great branch of medical science and practice. Formerly divided between midwifery and surgery, as a minor branch of one or both, gynecology has become an independent and essential department of the healing art.

When Marion Sims announced through the colums of the *British Medical Journal* that he believed the proper course of treatment in every case of gunshot wound of the abdomen is to open the stomach, search for the bleeding points and secure them, and suture intestinal perforations, he was pronounced by many eminent surgeons to be a dreamer. The suggestion of Sims was most timely, and shortly afterwards Bull successfully executed the operation. For years the treatment of opium in full doses has been pursued, with death in waiting. Now there is scarcely a State in the Union that one or more patients have not been rescued from certain death by prompt resort to operative treatment. He mentioned these circumstances to illustrate and emphasize the point, that surgery is advanced more by the aggressiveness of the surgeon than by timidity. In the face of desperate conditions of disease and injury, where there can be no safety whatever in delay and palliation, the only treatment worthy of consideration is the aggressive course which promises success. Under such conditions the most heroic surgery is conservative, and any other course is not conservative.

Dr. Thomas Addis Emmet, of New York, read a paper entitled

INJURIES TO THE PELVIC FLOOR AND THE METHOD OF REPAIRING THE SAME.

Dr. Joseph Taber Johnson, of Washington, D. C., followed with a paper on

THE GROWTH OF FIBROID TUMORS OF THE UTERUS AFTER THE MENOPAUSE.

He said the object of the paper was to put on record cases and opinions in opposition to this view of this important subject, and to aid in recasting our views and in modifying our practice.

He had within the past five years seen at least a dozen women with large growing and troublesome fibroid tumors of the uterus, who were over fifty years of age; some of them over sixty. These women had been assured by their physicians that if they could get along somehow, until after the change of life, their tumors would not only stop growing, but that they would lessen in size, and probably go away altogether; at least, the troublesome and dangerous symptoms would disappear. They had been advised against any radical operation, and encouraged to believe that as they grew older, they would get entirely well. In perhaps the majority of cases this might prove to be very good advice; but the point which the author wishes to make is, that as we are now better acquainted with history and behavior of these tumors, that this is no longer safe advice to give. We cannot assure any woman that her tumor may not prove to be one of the exceptional cases, and that it may not grow more rapidly even after the menopause than it did before, or that it may not present complications equally distressing or disastrous. When from forty to fifty per cent. of women subjected to supra-vaginal hysterectomy died from the effects of the operation, this was very safe and conservative counsel to follow. The possible dangers of the tumor were not equal to the probable dangers of the operation.

The author drew the following conclusions:

1. That the "rule" stated in the text-books, that uterine fibromata cease to grow after the menopause, has many more exceptions than is generally supposed.

2. That *when* they continue to grow after the menopause, they pursue a more disastrous course than before.

3. They more frequently become cystic, calcareous, or have abscesses develop in them.

4. These conditions, requiring operation according to well known rules of surgery, the patients are in a less favorable condition for recovery than before the menopause.

5. If the above conclusions are admitted to be true, it must follow that they furnish additional indications for more frequent and earlier resort to the radical operation.

In the hands of the best operators in cases where a pedicle can be secured, the mortality of supra-vaginal hysterectomy is rapidly approaching that of ovariotomy.

THE SURGICAL TREATMENT OF ANTERIOR DISPLACEMENTS OF THE UTERUS.

Dr. C. A. L. Reed, of Cincinnati, Ohio, read a paper on this subject.

He said anterior displacements of the uterus, when they exist to the pathological degree, are the opprobria of the gynecic art. It is indeed

true that many wombs lean far forward without inducing symptoms, but it is likewise true that many of them that are thus malposed do entail symptoms, objective and subjective, that frequently baffle our resources. It is a misfortune too, that many of all the displacements to which the womb is liable, those in which the organ deviates anteriorly to the normal axis are vastly the more prevalent. Thus in an aggregate of four hundred and ninety-four cases by Nonat, Meadows, Scanzoni, Valleix and Hewitt, quoted by Thomas and Mundè, there were two hundred and ninety-four anteflexions, and one hundred and eighty retroflexions; while Mundè himself reports two hundred and ninety-four anteflexions, thirty-three retroflexions and ten latero-flexions in a total of three hundred and thirty-seven cases. As the latter authority is disposed to look upon anteflexions in minor stages as a physiological (even congenital) condition, it is legitimate to infer that his statistics are based upon observations of displacements in the pathological degree. The conclusion is forced upon us, then, that of all the displacements of the uterus, those of the anterior variety are the more frequent; while the records of practice will force us, likewise, to the conclusion that of all the womb displacements those of the anterior variety are less amenable to treatment than are any of the others.

In the treatment the term *surgical* is employed in contradistinction to any method of treatment by pessaries, tamponnade, or electricity. It may be premised that all surgical methods devised for the relief of these conditions should be directed first, to the removal, when practicable, of the causes of the diseased conditions proper, and, finally, to the readjustment of the diseased organs to the normal physical forces of the pelvis.

In conclusion the author desired the Association to consider:

1. The etiological relationship of contracture of the utero-sacral ligaments to anteflexion.

2. The possibility of overcoming this condition by such conservative measures as rest, pelvic depletion and appropriate manipulations.

3. The feasibility of removing the obstructive dysmenorrhœa and the sterility usually incident to these cases by the plastic operation which he had described.

4. The inexpediency of forcible dilatation for the relief of these cases and its inability to effect a permanent cure.

THE PART THE SHOULDERS PLAY IN PRODUCING LACERATION OF THE PERINEUM, WITH SUGGESTIONS FOR ITS PREVENTION.

This was the title of a paper read by Dr. W. D. Haggard, of Nashville, Tenn., in which he made the following suggestions:

1. The patient should occupy the left lateral decubitus, at least during the second stage of labor.

2. Overcome rigidity of the vulvar outlet by the judicious use of chloroform.

3. The presenting part of the child should be supported and not the perineum during the passage of the head and shoulders.

4. Support the head by pressing it well up under the symphysis pubis, by placing the right thumb in the rectum and fingers of the right hand expanded over the occiput.

5. To retard the exit of the shoulders, pressure should be applied to the trunk and shoulder by placing the index and middle fingers of the left hand in the rectum, with the thumb in the vagina to restrain its exit.

6. Support the head and neck by pressure well over the symphysis pubis.

BOOK REVIEWS.

HISTORY OF CIRCUMCISION FROM THE EARLIEST TIMES TO THE PRESENT, with a History of Eunuchism, Hermaphrodism, and the different Operations Practiced on the Prepuce. By P. C. REMONDINO, M.D. Cloth, small 8vo, pp. 346. Philadelphia: F. A. Davis. 1891.

This little book is one that will be welcome not only to the table of the general practitioner on account of its intrinsic worth, but to the medical historiographer on account of the great accumulation of historical facts the author presents, and to the literary class on account of the pleasant style pervading the book throughout. The chapters are as follows: 1. Antiquity of Circumcision. 2. Theories as to the origin of Circumcision. 3. Spread of Circumcision. 4. Circumcision among Savage Tribes. 5. Infibulation, Muzzling, and other curious Practices. 6. Attempts to abolish Circumcision. 7. Miracles and the Holy Prepuce. 8. History of Emasculation, Castration and Eunuchism. 9. Philosophical considerations relating to Eunuchism and Medicine. 10. Hermaphrodism and Hypospadias. 11. Religio Medici. 12. Hebraic Circumcision. 13. Mezizah, the fourth or objectionable act of Suction. 14. What are the benefits of Circumcision? 15. Predisposition to and Exemption and Immunity from Disease. 16. The Prepuce, Syphilis and Phthisis. 17. Some Reasons for being Circumcised. 18. The Prepuce as an Outlaw, and its effects on the Glans.

The six remaining chapters discuss the relations of the prepuce to phimosis, cancer, gangrene of penis, calculi, reflex neuroses and dysuria, enuresis and retention.

Our author makes out a very strong *ex parte* case against the prepuce, and whether accepting his conclusions or rejecting them, one can but admire the author's ingenious presentation of his case.

COMPARATIVE ANATOMY OF THE DOMESTICATED ANIMALS. By A. CHANVEAU, M.D., L.L.D. Translated and edited by GEO. FLEMING, C.B., L.L.D. Second English edition. New York: D. Appleton & Co.

For the medical man who is so practical that he ab-

jures all literature that is not an every day necessity, Chauveau's work has no charm. The student of natural history and of biology, however, finds this work a most valuable addition to his library. To the teacher of anatomy it is,—or should be—indispensable. Very few works on human anatomy are so beautifully illustrated and pleasantly written as is this treatise on comparative anatomy. The generalization of the various topics are excellent, and the specialized descriptions of the various structures are well worthy of imitation by compilers of anatomies of the human subject. That Chauveau's work is the best for students of veterinary medicine goes without the saying. Indeed there is practically no competition in this field, Chauveau being generally accepted as filling the want completely.

BACTERIA AND THEIR PRODUCTS. By G. SIMS WOODHEAD, M.D. (Edin.), Director of the Laboratories of the Conjoint Board of the Royal Colleges of Physicians (Lond.) and Surgeons (Eng.), etc. New York: Scribner and Welford, 1891. 12 mo, pp. 459. Price $1.25.

This book has been upon our study table for some two months, during which time we have had frequent occasion to refer to it, and always with satisfaction. The ground covered by the work includes a history of microörganisms; fermentation; the bacteria of certain special diseases, cholera, typhoid fever, tuberculosis, leprosy, authrax, tetanus, diphtheria, etc.; vaccination; bacteria in air, earth, and water. A single chapter is devoted to the chemical products of bacteria. The book treats of philosophical and applied bacteriology, rather than technique, and cannot fail to prove useful to the practitioner.

THE URINE, THE COMMON POISONS, AND THE MILK. Memoranda, chemical and microscopical for Laboratory use. By J. W. HOLLAND, M.D., Professor of Medical Chemistry and Toxicology, Jefferson Medical College of Philadelphia. Illustrated. Fourth edition, revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1891.

This well known text-book, as its title indicates, is intended for laboratory use. Teachers engaged in the difficult task of teaching chemistry to medical students, would do well to carefully examine this book, with reference to its use with their own classes.

ORIGIN, PURPOSE, AND DESTINY OF MAN, OR PHILOSOPHY OF THE THREE ETHERS. By WM. THORNTON. Boston: Published by the Author, 1891.

As an example of the author's philosophy, the following may be given. After reciting a long list of articles of the materia medica, which are not found in the body, and which include such substances as opium, mercury, arsenic, colchicum, digitalis, iodoform, and nux vomica, he says: "If such materials as the above list contains are never found in the body, they should never be used in the different forms of sickness for which they are now prescribed." This occurs in the chapter entitled "How to make Medicine a Science." The book is worthless.

PHYSICAL DIAGNOSIS. By JAMES TYSON, M.D.

This is a convenient manual that is well worthy of a place in every student's library. It is concise, yet sufficiently elaborate for all ordinary purposes, and pertains only to diseases of the chest.

THE MEDICAL NEWS VISITING LIST FOR 1892.

Weekly (dated, for 30 patients); Monthly (undated, for 120 patients per month); Perpetual (undated, for 30 patients weekly per year), and Perpetual (undated, for 60 patients weekly per year). The first three styles contain 32 pages of data and 176 pages of blanks. The 60 Patient Perpetual consists of 256 pages of blanks. Each style in one wallet-shaped book, pocket, pencil, rubber, and catheter scale, etc. Seal grain leather, $1.25. Philadelphia: Lea Brothers & Co. 1891.

THE CHICAGO EXHIBITION.—The energetic manner with which the preparations for the Chicago Universal Exhibition have been pushed forward, not only in America, but in England and other countries, gives promise of great success. We are glad to note that an English Royal Commission has been appointed, and that its representatives (Mr. James Dredge and Sir Henry Trueman Wood) have been over to Chicago and satisfactorily concluded all necessary arrangements for the participation of the English exhibitors. From the medical and sanitary point of view the exhibition will certainly prove of great interest. In the first place, the organizers are particularly anxious it should be thoroughly understood that the exhibition is not merely a commercial undertaking. On the contrary, every endeavour will be made to bring together collections of a purely scientific character. There will also be a great number of international scientific congresses, which will commence in May and continue till November. A large building destined ultimately to become an art museum, is to be erected on the lake front. In the meanwhile, the exhibition executive have offered to pay part of the cost for its erection, so that they may use it during the exhibition as a meeting place for congresses. It is anticipated that the congresses will attract so many people that provision has been made for overflow meetings. The auditorium theatre will be reserved for such emergencies, and it is large enough to hold 10,000 persons. The gathering together of so large a number of people will of itself involve many important administrative and sanitary problems. There will be at the exhibition practical experiments and tests of drainage and of the disposal of sewage. The water mains are now being laid down, and these will supply daily from forty to fifty million gallons of water available for drainage, fires, etc. But, apart from this, pipes are being laid, some of them for a distance of ninety miles, to bring pure mineral spring waters to the exhibition for drinking purposes. In looking over the list of the 172 groups into which the objects to be exhibited are classified, many among them will be found of direct interest to the medical profession. Indirectly, America, as the granary of the world, has much to show affecting food supply. It is to America that we are mainly indebted for the cheapness of food in England, and on this cheapness public health in a measure depends. All that concerns the storing, tinning, preserving and transporting of meat, fish, and corn from America is of great practical importance, and never will there be probably a better opportunity of studying these problems than that which the Chicago Exhibition is certain to afford.—*London Lancet*.

AT THE last meeting of the Board of Directors of the New York Post Graduate Medical School and Hospital, J. West Roosevelt, M.D., was unanimously elected Professor of Clinical Medicine.

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SATURDAY, DECEMBER 5, 1891.

THE RESPONSIBILITY OF MEDICAL TEACHERS AND WRITERS.

A caustic article from the pen of DR. W. H. LINK, of Petersburgh, Ind., in a recent number of the *American Gynecological Journal*, calls attention to what he considers some of the abuses in medical teaching. He is particularly incensed at the promotion to professorial positions of men whose principal merit lies in the possession of money, or medico-political influence, or because they have written a book.

Perhaps no one can so fully appreciate the difficulties of a teacher's position as a teacher himself, but the effects of his teaching, as felt by the taught, may also with propriety be brought to his attention. It is certain that many men are willing to make oral statements before a class of undergraduates, which they would not be willing to publish and have subjected to the more unbiased and discerning criticism of their fellow practitioners. Particularly do some gentlemen teach diagnosis much more dogmatically and with show of certainty in the lecture room, than they would care to exercise it at the bedside. The difficulties of practice as met by the young practitioner, are so different from what in many instances he has been led to expect, that a revulsion of feeling toward his teacher, very frequently unjust, and loss of confidence in him takes place, which is not to be wondered at. This puts upon the teacher the responsibility of giving to his students the best which the profession as a whole has accepted, the latest which the energy of investigators has produced, together with such comments as his individual experience may dictate, but let it be understood that such comments are personal, and not, therefore, authoritative. Brilliancy should give place to the real. These students are soon to put into serious use the lessons taught them, and without the balancing guide which experience alone can give.

More to be dreaded than the careless teacher, is the reckless writer. In these days of numerous medical journals, many of them crying for matter, many essays are printed which do but small credit to their authors. The dangerous papers, however, are those which are written by clever men and good writers, principally for advertising purposes, and which appear in some of the best journals. Papers which are intended principally to show the ease with which the writer can perform a certain operation, and which represent as free from danger some questionable procedure, often fail of their original object, but do succeed in making unqualified men undertake work which they had far better have left alone. The honest practitioner, looking for assistance in his work, and misled by the reputation and official standing of the writer, takes his implied advice and does damage. Ultra conservative suggestions from men prominent in the profession may also lead to baneful results.

A greater responsibility lies upon the writers of books, because of the greater weight usually attributed to them. So long however, as the writing of a book shall be regarded as the best indorsement for a professional position, or for high standing in the profession, so long shall we find books, thrown together from materials found in a convenient library, novel perhaps as to style and arrangement, but representing the opinions of others rather than the knowledge of the author; devoid of originality. Incalculable is the damage done by such books among conscientious workers who look to writers for assistance in times of trouble. It is not always, perhaps we might say, it is not often the book which contains the greatest number of references which is the most valuable. Mere erudition without the leaven of originality and experience, is heavy

and valueless. As a type of a most excellent book, we would mention BRINTON, On Diseases of the Stomach. This work is replete with facts, carefully determined individually by the author; is a veritable mine of information, and may be accepted as a model monograph.

Perfection in books is not to be expected, nor agreement in opinion with everybody, but books which are made to sell, or books which are written with some other reason than to instruct, can usually be detected, and should be plainly stamped for what they are worth. This throws some responsibility upon reviewers. Every book accepted for review, is entitled to a sufficient study to determine its value. In many cases this can be done easily and quickly. Reviews should be considered as made not so much for the benefit of authors and publishers as for the guidance of buyers. Indiscriminate praising of all books reacts against meritorious works, and assists in the sale of many books which should fall flat. From a perusal of many book notices it would seem that many reviewers believe that an extract from a book's preface is the best possible review of it.

The practice is to be denounced of condemning a book on such minor grounds as grammatical errors, or statements so gross as to be evident slips of the pen, and unlikely to mislead any one, while at the same time failing to call attention to its valuable parts. But the duty of the reviewer is plain, to stamp as spurious all books which bear the marks of having been written for personal ends only.

Let our teachers and writers feel the responsibilities which rest on them and weigh well their views before giving them to their brethren.

SECTION WORK.

With this issue of THE JOURNAL there is a practical completion of the work of publishing the proceedings of the late meeting of the American Medical Association at Washington. The work has been as methodically done as the matter in hand would permit, and being off with the old we are now on with the new.

Already the officers of the several Sections are engaged in securing the right men for special lines in their several departments, and we are informed that their success betokens the next as the grandest meeting in the entire history of the Association. This sounds very loud to those who were at Cincinnati, Nashville and Washington, but all the same, the winds that whisper the words so softly in our ears, are harbingers whose voices may be relied upon as telling only the truth, the whole truth and nothing but the truth, and if you are inclined to be the least bit skeptical, begin to think of your visit to Detroit next June not only for the purpose of verifying our statement, but to be mentally, physically and professionally refreshed.

At the late meeting in Washington, the Association declared its wish to have a complete stenographic report made of not only the general meetings, but also of each of the Sections, so that there was fair and sufficient warning given that whatever a member gets on his feet and says out loud will be written down. The discussions will all be reported, and the stenographers will, at the close of each day's session, hand over to the Section officers their notes. The Section officers will put them in form for publication, first winnowing the chaff from the wheat, so that there may be a gathering of material that will fairly reflect the progress of our art during the current year.

Three chairmen of Sections inform us that their programs are practically complete, but of course are held open for amendment. We are pleased to make a note of this, because of its indication of an enthusiasm in their work that is highly commendable. These chairmen know just what they are about, in assigning lines of thought for development to the men who are already known for their professional achievements in particular directions.

Furthermore, these same chairmen tell us they are making special efforts at securing the best known men to take leading parts in the discussions. This is for the purpose of bringing out a careful expression of opinion that is pertinent to subjects of which such men are conceded to be masters, or very diligent students.

While we fully appreciate the value of a carefully prepared paper by a good reasoner, it is the commonest thing that happens at a society meeting, for a paper that has not much in it, to develop a discussion of the utmost value. Discussions should be and usually are the life, body and soul of the meetings.

METALLIC BODY EXTRACTED FROM THE VITREOUS BY THE ELECTRO-MAGNET.

In the September number of the *Australian Medical Gazette* DR. BARRETT reports a case in which the electro-magnet was successfully used to remove a chip of iron from the vitreous chamber. The patient, a male aged 21 years, while using a hammer, felt something fly into his eye, penetrating the cornea. When seen by his physician, a day or more afterwards, there was evidence of a corneal wound and the crystalline lens was seen to be swollen and opaque. After a few days had been allowed to pass, and the lens had softened sufficiently to favor its evacuation, an operation for its incision was performed. During this procedure, a wave of vitreous humor passed into the anterior chamber and through the operation wound. The foreign body escaped into the anterior chamber also, and thence it was promptly extracted by the magnet. The patient did well ultimately, his vision being $\frac{6}{18}$ C + 13 D., a result which has not been surpassed in any recent similar case that has passed under our notice.

DOMESTIC CORRESPONDENCE.

Etiology of Scarlet Fever.

Journal of A.M.A.—Dear Sir: In your last issue you say you will take pleasure in publishing communications on cases like the following, and as it will probably be of some value in the etiology of scarlet fever, I will report it. Six weeks ago yesterday Chattie Myers, aged 10 years, went to Morley, a village four miles from this place and was in a room for an hour in which another little girl was suffering with scarlet fever. The little girl had been sick three days. Chattie came home and just two weeks afterwards was taken down with the disease, was quite sick and is now just about through the shedding process; her parents have kept the different portions of skin and have handsful of it in the shape of fingers, toes, etc., and during this week Chattie is bloated and threatened with a severe attack of uremia. So there is no doubt in my mind that scarlet fever is contagious during the first few days, but it has not proven *very* contagious (in this locality) as it has not spread at all in this community. There were two cases here last winter and no effort made to keep it from spreading, but it did not do so. It seems to me that in an intensely malarial district scarlet fever, diphtheria and typhoid fever lose their extreme virulence.

At Charleston, a town of 1,500 inhabitants, they have recently had an epidemic of diphtheria, and only one child died, and it was an unhealthy child before it was attacked. Within the last few years there have been several cases of scarlet fever in this and Mississippi county, but people are not uneasy when a case is reported. As to treatment and management of either one of the above named diseases, there is rarely anything done in the way of isolation or to prevent neighbors from visiting and sitting up with the sick. So your advice as to quarantine is of no value here. I recollect on one occasion a gentleman from Tennessee came to Charleston and his son was taken down with scarlet fever, and the father allowed his other children to go around and play upon the streets, and the citizens became so incensed that they talked of mobbing him, but later in the season the scare was over and there was no more comment upon a case of scarlet fever than there was of one of intermittent fever. There is some influence that is of benefit to the Swamp Doctor. Either the malaria helps him in his treatment or calomel, quinine and opium are three mighty good remedies in scarlet fever. We hardly ever know what we are treating until half the neighborhood have been exposed, and then if the case is mild, which is generally the case, we call it "scarlet rash," which the laity thinks is not contagious or dangerous. After the patient begins to lose his scarf skin and probably has a convulsion from uremic poisoning, we tell the people that it is genuine scarlet fever and they had better keep the neighbors away. Respectfully,

Oran, Mo., Nov. 23. W. P. HOWLE, M.D.

SELECTIONS.

COMPRESSED MEDICINE TO BE USED HEREAFTER IN THE ARMY AND NAVY.—Army and Navy officers, and particularly those of the medical branches, evince great interest in a contract which was awarded at the War Department for a new system of carrying medical and surgical supplies for an army. Ever since the last Sioux campaign, there has been a growing demand for a plan by which supplies needed by the surgeons could be placed in a more compact form than liquid, and carried with greater safety and economy. The result of to day's award is believed to be as near perfection as possible.

In a small, light wooden chest, 23 inches long, 14½ inches wide and 17¾ inches high, are sixty square bottles, containing as many different kinds of medicine, but in compressed tablet form, none of them being larger than an ordinary peppermint lozenge. One of these lozenges or tablets contains all the necessary ingredients of a famous liniment, and when dissolved in an ounce of distilled water its healing properties are the same as if it was in liquid shape and in a big glass jar. Some idea may be formed of the perfection to which the art of compression has been brought, by the fact that if the contents of this small brass-bound chest were liquefied and in their customary jars and bottles, they would occupy nearly one-half of the space of a regular freight car.

There are two of these chests to be supplied to each battalion of 200 men. No. 1 is marked with the Geneva Red Cross and inscribed "Medical Supply Chest," while the only difference in No. 2, so far as outward appearance is concerned, is the inscription, "Surgical Supplies." With certain kinds of medicine, like cough mixture, used in quantities, a bottle holding a gill of the compressed tablets is equivalent to a gallon of liquid, and should the bottle break, the merits of the tablet are not impaired in the least.

Contract was awarded for 200 of these chests, and one of each kind is to be placed under the driver's seat of an ordinary ambulance, or in case of field service and when pack-mules have to be utilized, the chests are suspended on each side of the pannier, their weight with contents being but 85 lbs. each. On the top of each bottle-stopper is the name of its contents, and fixed securely in the lid of each chest is a list of its contents, for the information of the surgeon or hospital steward in charge. Surgeon J. C. Merrill, of the Surgeon-General's office, who has been supervising and conducting the experiments, declares that the new system will revolutionize the mode of supplying needed articles for an army, and will be of value as well to the National Guard organizations of the various States. Iowa is already in the field with inquiries on the subject of these chests, and it is quite likely that at the next annual encampment of the troops of the Hawkeye State, these necessary medical and surgical adjuncts will be seen in abundance.

Whisky, brandy, alcohol and castor oil are carried in liquid form, their ingredients rendering it impossible to form them into tablets, but cod-liver oil is compressed. In making the investigations, the English army system of carrying medical supplies was examined, but while lightness was obtained by means of wicker baskets covered with rawhide, it was demonstrated that if the hide became dampened it would twist in all shapes, and destroy the bottles which the wicker baskets were filled with. Hence a light wooden chest was determined upon, and a New York firm provided what proved to be the best and most attractive-looking model. It was accordingly awarded the contract.—Washington Special to *Chicago Tribune.*

THE PORO-PLASTIC FELT JACKET, FOR SPINAL TROUBLES.[1]—I do not propose to indulge here in a lengthy dissertation upon the etiology and pathology of spondylitis, or Potts' disease, but will present a few facts based upon an actual experience in the surgical and mechanical treatment of that distressing malady, as well as of lateral curvature of the spine.

The advantages of the poro-plastic felt over plaster-of-Paris and other suggested agents as a material for spinal jackets are many. Its most prominent claims for superiority are its *lightness*, its *sporosity* and its *resisting power*. The weight of a spinal jacket made of this material for an adult is only one-fourth of that of the plaster-of-Paris jacket for the same patient. This is a point strongly in its favor when we remember how delicate are those persons who have to wear such an appliance.

That poro-plastic felt is the most highly porous material yet suggested for a spinal jacket no one who has taken the trouble to investigate the matter will deny. While our most eminent American orthopædist claims that a plaster-of Paris jacket is quite porous, I must say that I have failed to discover any porosity in such a jacket when made in accordance with that eminent gentleman's instructions. The amount of air likely to pass through a half dozen consecutive layers of a plaster jacket, with an abundance of extra plaster rubbed thoroughly into every pore or mesh of the cloth employed in its construction, is certainly reduced to a minimum, if there be any at all. The amount of support or resistance in the poro plastic felt can be increased at will by simply multiplying its layers where such support is desired.

The poro-plastic felt adjusts itself to every irregularity of the parts with the greatest precision and nicety, while its elasticity permits free and unimpaired respiration—important points when the comfort of the patient is taken into account.

[1] Read at the Meeting of the Mississippi Valley Medical Association, St. Louis, Mo., Oct. 14, 1891, by Ferdinand King, M.D., of New York.

Before proceeding with a description of the mode of preparing a spinal jacket, I desire to refer briefly to two important points in the diagnosis of Potts' disease—not for the benefit of the orthopædic specialist, but for the guidance of the general practitioner under whose observation such cases usually first come. The two diseases with which it is most likely to be confounded are lumbago and anæmia, or congestion of the spinal cord. This confusion results in much delay in the beginning of the proper treatment of the trouble.

The prominent diagnostic symptoms in Potts' disease just referred to are pain at a given point along the spinal cord, which is relieved by catching the patient under both arms and lifting him up to a point of complete suspension, and the peculiar gait noticed in the early stages of the disease, when the patient walks with a cat-like tread upon the balls of the feet, and avoids throwing any weight suddenly upon the heels.

The mode of preparing the poro-plastic jacket is simple enough to popularize it with physicians, even in the most remote sections of the country. The first step in the manufacture of a felt jacket is to make an accurately fitting plaster-of-Paris jacket. This is done in the usual manner, the patient is suspended according to Sayre's method, and the jacket is made over a thin, closely-fitting shirt of gauze or other light material. The width of the plaster bandages to be employed must be determined by the size of the patient. If he be an adult, well developed, a three inch bandage should be used; if a child, a two or two and a half inch bandage is the proper width. Of the width chosen, six 5-yard bandages will be required. Only two of these should be placed in the water at a time, the remainder to be put in by an assistant two at a time as the work proceeds. A bandage is ready for use when the water in which it has been submerged ceases to bubble or effervesce. The first circular layer of the bandage should pass around the hips at least two and a half inches below the crest of the ilia, so as to secure a liable basis of support for the superstructure. The lower half of the jacket should be allowed to "set" or harden sufficiently to sustain the upper half, and thus prevent sagging near the center. Always let the jacket extend well up into the axilla. We must rely mainly upon the hips and chest walls for our points of support.

When the entire jacket has hardened sufficiently we divide it in front along the median line from the top downwards with a strong, sharp knife. Instead of guiding the knife with fingers of the left hand, I follow a groove in a piece of zinc previously placed in position under the gauze shirt, corresponding with the median line and extending from the sternum well down on to the pubes. This zinc strip is two inches wide, and has a groove extending through the centre from end to end,

After the jacket (including shirt) is removed, its cut edges should be immediately brought together and held in apposition by a bandage passed repeatedly around it, and then allowed to become thoroughly dry by exposure in the sun or on a stove or range. The plaster jacket thus completed serves as a mould for making a cast of the body. This cast is made by filling the jacket or mould with plaster-of-Paris mixed with water, of the consistency of wheaten dough. A cylinder of wood or metal should be set in the middle of the mould, equidistant from all sides, so as to leave a hollow opening through the finished cast for convenience in handling, etc. Over this cast the felt, previously softened by immersion in hot water, is laid and allowed to harden, care being taken to rub down and smooth out all wrinkles and irregularities. When this has become thoroughly hardened, it is removed from the cast, and then becomes itself a cast for the addition of any extra layers that may be desired for the purpose of increasing its strength at any point necessary. These extra pieces or parts after being properly fitted, are riveted on to the first or main layer of the felt. The corset is now trimmed, the edges are bound with soft leather or sheep

skin, and a row of hook-eyelets put on either edge in front for the laces that secure it firmly in position on the patient. If additional strength is desired on either side of the corset, it may be secured by steel strips placed transversely between the layers of felt and held in position by small rivets. If the spondylitis be located in the cervical portion of the spinal column, thus necessitating the use of the jury-mast, the latter may be riveted on to the upper part of the felt jacket. Likewise a leg splint or brace for hip-joint trouble may be riveted on the lateral lower border. The solidity of the felt assures solid support in either case.

As stated at the outset the poro-plastic felt is exceedingly porous, permitting free ingress and egress of the air as well as the free escape of skin excretions from the body. Even greater ventilation may be secured by inserting shoe eyelets distributed over the surface of the jacket at such points as may be desired. These eyelets will add to, rather than detract from, the strength of the appliance, thus serving a double purpose.

As a general rule the jacket is fastened in front by ordinary corset lacings, but if the greatest possible space for the expansion of the chest walls is desired, as is usually the case in treating lateral curvature, elastic lacings may be employed.

In conclusion I would urge upon the profession the importance of securing the proper make of felting for the manufacture of spinal jackets, as disappointment will certainly follow the employment of any other than that which I have been using for the past three years. I do not know by whom this felt is manufactured, but I do know that it may be obtained from any reputable instrument dealer in this country at very small expense.—*Int. Journal of Surgery.*

Extirpation of Carbuncle.—Dr. Riedel has practiced immediate extirpation of carbuncles since 1883, and finds that this procedure is far preferable to the customary treatment by deep incisions. The operation is performed as follows: A circular incision is made through the skin around the infiltrated area, and from this a number of vertical incisions are made to radiate toward the healthy peripheral parts. At least four cutaneous flaps are thus formed, which are separated from the infiltrated tissues, and then the latter are dissected off from the fascia of the subjacent muscles. The hæmorrhage, which is frequently profuse, is controlled by means of compression and tampons. On the evening of the day of operation the temperature has usually become normal. On the following day the swollen cutaneous flaps are approximated; the opening in the center provides for drainage. The advantages of this treatment are: 1. A dangerous inflammatory focus is replaced within half an hour by a perfectly harmless loss of substance in the skin and subcutaneous tissue. 2. An extension of the local process or general infection are both excluded. 3. The loss of healthy integument at the periphery of the carbuncle is reduced to a minimum. 4. For this reason healing takes place rapidly and a good cicatrix results.—*Deut. Medicin. Wochenschr.*, No. 27, 1891.

Skin Grafting after Excision of the Mamma.—Mr. Watson Cheyne, F.R.C.S., reports two cases illustrating the value of Thiersch's method of skin grafting in closing recent wounds, and thus enabling us to operate in cases where otherwise we might hesitate, as well as to perform the operation more effectually in less severe cases. In excising the breast great care should be taken to remove also all the fascia covering the pectoralis and other muscles exposed in the wound, partly because by doing so lymphatic vessels lying on this fascia, which might become infected, are also removed, and partly in order to lay bare a very vascular surface on which to lay the grafts. The grafts consisted of half the thickness of the skin, as advised by Thiersch, because the chances of adhesion are greater. The skin having been well purified, long strips, about an inch in breadth, are cut with a long razor, preferably from the thigh, and are spread out on the raw surface, after the bleeding has been completely arrested. The strips must lie closely side by side—in fact, they should rather overlap each other and the edges of the wound. The extent of the wound to be covered at the time of operation will depend on the condition of the patient and the circumstances of the case. In any case it will always be best to cover the whole of the pectoralis at once. If it is not thought advisable to cover the whole of the wound at the time of the operation, any portion left can be readily grafted after the wound is granulating.—*Lancet.*

The Treatment of Appendicitis.—The treatment of appendicitis was recently discussed at a meeting of the Philadelphia County Medical Society, and although nothing new was brought forward, the discussion is of value as an exposition of the views of a number of distinguished physicians and surgeons on this still obscure subject. Dr. Pepper ably defended the medical side of the question, and urged moderation in the operative treatment. "If every case of appendicitis were operated upon," said he, "the mortality would be tenfold what it is now. As a general rule, these cases recover under medical treatment and remain permanently well afterward." He was entirely opposed to surgical measures in the intervals, and claimed that records showed that thorough treatment, hygienic, dietetic and medicinal, has been followed by complete cure. Mr. Bryant, the famous English surgeon, who was present, fully agreed with Dr. Pepper, and sententiously remarked that delay in operating was the wisest course in the majority of cases. He thought that if the disease progressed slowly, commencing with localized pain and tenderness in the right iliac fossa, and attended with only slight swelling, the surgeon's knife could safely be dispensed with. He was opposed to purgation in these cases, and places his reliance upon rest and diet, together with belladonna externally, and opium internally. In all acute cases, however, or where symptoms of peritonitis develop, it was the surgeon's duty to interfere at as early a date as possible. As regards the propriety of operating between the attacks, Mr. Bryant's views were characterized by true conservatism. He called attention to the fact that in the majority of cases there is no second attack, and even if there is, it can be treated on the same lines as the first, operative interference being reserved for cases in which the symptoms do not rapidly recede. Mr. Bryant also prefers, in most cases, an incision more posterior than the right semilunar line, finding it easier in this way to reach the cæcum; and in the event of failure to discover the appendix, he contents himself with irrigating the part and treating it by the open method. Drs. Keen, Baldy and Price emphasized the importance of having a surgeon associated with the case from the beginning, so that he may become familiar with its features, and be ready to deal intelligently and promptly with the conditions when the time for operation arrives. The advisability of administering purgatives was also considered, and to judge from the tenor of the discussion, there exists still much difference of opinion on this point. Some favored the use of calomel and podophyllin, others the salines, while still others were opposed to purgation.

The discussion, of which we have given this brief outline, serves, however, to emphasize the inadequacy of our diagnostic resources, and to this should be attributed the divergence in the views of eminent physicians and surgeons on the question of treatment. If it were possible in most instances to recognize the exact condition present, it would be an easy matter to decide whether any given case is to be subjected to medical or surgical

therapeutics. The presence of pus or perforation calls for immediate surgical intervention, but, as Dr. Baldy justly remarks, "there are a large number of border-line cases in which it is next to impossible to say whether pus is present or not." At any rate, the association of a surgeon with the physician in the managemeut of cases of appendicitis is a step in the right direction, and one calculated to produce a greater degree of unanimity in the views of physicians and surgeons, both as regards diagnosis and treatment.—*Internat. Journal of Surgery.*

THE OCULAR MUSCLES IN THOMSEN'S DISEASE.—Raymond (*Union Méd.*, June 11, 1891) describes two cases of Thomsen's disease. In one the internal recti of both eyes were hypertrophied, and the other eye muscles were becoming so. In certain movements of the head and neck there was coincident spasm of the lids; the reaction of the pupil was normal in both eyes; the optic discs and color sense were also normal. The left eye was astigmatic and slightly myopic, but the right eye was normal. The superior recti were affected with spasm in the second case; the pupils reacted very quickly to light; the optic disc and visual field were normal.

IN DIPHTHERIA, locally, Marchand's peroxide of hydrogen and whisky, internally, have established their value. A word in regard to the use of the peroxide: It should always be purchased in the smaller 4-ounce bottles, protected from the light by blue glass bottles, and corked with rubber. That sold by the druggists from large bottles is, in the majority of cases, worthless. It is a very unstable article, and unless it causes immediately a white, foamy reaction when brought in contact with the false membrane, it should be discarded, and another lot obtained. I am satisfied that I use it more freely and more persistently than most practitioners. I use mops made by twisting a sort of absorbent cotton upon sticks, using as many as thirty or forty in the twenty-four hours. Such mops will take up nearly a half ounce apiece, and, when forced well back into the pharynx, reach all parts. The gagging and resistance of the child assists in the distribution of the fluid. As soon as a mop has been used, it is committed to the fire. In this way I have treated the worst as well as the milder forms of diphtheria with complete success. I believe that the systematic use of definite, although often toxical doses, of whisky, even in children of tender age, are the surest safeguard against heart failure.—*Larabee, Am. Pract. and News.*

THE TREATMENT OF VARICOSE ULCERS.—Dr. J. Hartmann recommends ichthyol in the treatment of varicose ulcers of the leg. After cleansing the sore with soap and warm water he applies pure ichthyol to the ulcerated surfaces and covers them with a thick layer of cotton, which is secured by an unstarched gauze bandage. The application produces an intense burning pain which usually lasts only for a short time. During the following days the patient experiences great relief, but as soon as the sore again gives rise to pain or discomfort, the dressing must be changed. Even at the first change of dressings, the ulcer will be found to present a better appearance, it will look cleaner and, unless very chronic, will show signs of granulation at the margin.—*Correspondence Blatt. f. Schweitzer Aerzte.*

THE FORMATION OF A GASTRIC FISTULA IN CANCEROUS STENOSIS OF THE CARDIAC END OF THE STOMACH.—Dr. Lauenstein advises that in cases of marked cancerous stenosis of the cardiac end of the stomach, it is better not to resort to formation of a gastric fistula. He has had two cases of carcinoma of the cardiac, in which access to the stomach was prevented by the tumors which were situated under the diaphragm. The neoplasms had invaded the mucous membrane of the stomach, which had to a certain extent lost its digestive functions. It may also happen that the stomach is so firmly fixed by adhesion of the tumor at the cardia that the formation of a fistula is attended with great difficulties. For these reasons the author prefers rectal alimentation in this class of cases. A cancer of the cardia should be suspected if the œsophageal bougie encounters resistance at a depth of 38 to 41 centimeters from the teeth. In one of his cases the author noted a loud systolic sound in the epigastrium, synchronously with the pulse, which the autopsy showed was due to pressure of the tumor on the aorta.—*Centralbl. f. Chirurgie.*

IN THE SWISS CANTON of St. Gaul, a law passed in 1890 provides that habitual drunkards may be placed under care in an inebriate asylum, for periods varying from nine to eighteen months, either on the ground of voluntary submission, or by direction of the local authority (District Council). Proceedings may be initiated by a relation or guardian of the drunkard, by any public body, or on the sole responsibility of the council, but they must be justified by a certificate from the medical officer of health, that such seclusion is necessary for the cure of the patient. If his personal property is insufficient to meet the expense, the public funds are to be applied, not only for his own maintenance, but, if necessary, for the support of his family during his enforced absence.—*Journal of Inebriety.*

THE Commissioners of the Lancashire Lunatic Asylums state in their annual report just issued, that "although drunkards are not generally regarded as insane, it is a question whether the habitual tippler might not with advantage be considered an irresponsible being, and treated as such." They point to the fact that in not a few cases the only cause that can be detected for a patient's insanity is the intemperance of one or both parents.—*Ibid.*

INEBRIETY is curable in nearly all cases in the early stages. After repeated poisoning or intoxications for years, conditions of degenerations come on, from which recovery is very rare. The drink impulse may die out, or be permanently checked, but the injury to the brain and nervous system remains.—*Ibid.*

INEBRIETY, as a disease, is more seriously affecting the moral and civil affairs of state than any other that will come under the notice of the practitioner of medicine. Excepting the poison of syphilis there is none other so productive of far-reaching morbid processes and capable of affecting all the tissues of the body as alcohol. The results either of moderate drinking or chronic alcoholism will extend to generations to come and show in crime, drunkenness, or nervous disorders. Inebriety and its attendant maladies are conditions of progressive degeneration. And while one may stand surprised when he starts out to trace up the history of a patient and finds that it can be followed back to a drinking father or mother, yet it is better for the physician and patient, for the former will know what is required of him and the latter will recognize the ability that may alleviate his trouble. But practicallly there is no limit to the possibilities of convincing information on this subject, and the more it is studied the less is there to be said in favor of the use of alcohol in any form.—*Dr. Reeder in Lancet-Clinic.*

GELSEMIUM is said to be an efficient remedy for toothache; at least, for the non-inflammatory varieties. Fifteen minums of the tincture, with two grains of quinine, are given every hour for three doses if required.

THE INSOMNIA OF CONTINUED FEVERS AND ITS TREATMENT.—In the earlier stages of these fevers insomnia is pretty certain to accompany the hyperthermia, while sleep often attends a fall in the temperature. It would seem that overheated blood is itself inimical to sleep by exciting the cerebrum. Certain it is that cold bathing—the cold or tepid bath—and antipyretics that bring down the fever, quiet the nervous disturbances and promote sleep. Hence, for the restlessness and insomnia of typhus and typhoid fevers, there is often no better treatment than a cold bath of about fifteen minutes' duration, the temperature of the water being from 60° to 75° F., and during the bath cold water may be poured on the head in cases of extreme pyrexia with restlessness and delirium. While fifteen minutes ought to be long enough to depress the febrile heat to nearly the normal, in some cases the bath may be of longer duration.

Where the cold bath is impracticable, from difficulties on the part of the patient or his surroundings, some one of the new antipyretics may be tried. There is much testimony in favor of acetanilid as a nervous sedative in fevers. Five grs. every hour for three or four doses (in an adult), will generally lower the febrile temperature two or three degrees, and one or two hours of quiet sleep (especially if the medicine be given in the night-time) is almost certain to follow. By many practitioners and hospital physicians, analgesin is regarded as the preferable hypnotic; the dose should be double that of acetanilid.

The antipyretics, though they undoubtedly have a marked action on the thermogenetic and thermotaxic heat centres, which are under abnormal irritation by the fever poison, an action which is extended to the higher cerebral centres, certainly do not affect the infectious agent, and hence the course of the fever is not influenced by them. Their prolonged use is probably attended by some cardiac depression (an evil to be especially shunned in fevers), and the best clinical authorities are shy of them, seeing no permanent advantage in the continued administration of these medicaments, but possible mischief. At the most, their employment is restricted to the obtention of such sedation as is needed for the nervous disturbances.

In regard to pure hypnotics, chloral is undoubtedly the best one. Sometimes, in the later stages of the fever, 20 drops of deodorized tincture of opium is of service. Sulphonal, chloramid and the newer hypnotics are not of service. Alcohol, in not too large doses, has a place in this line of therapeutics.

Febrile insomnia is essentially a toxic insomnia; this has been made apparent by the investigations of the last few years. Whether it be the microbes or their ptomaines, or both which excite the cerebrum and derange the nervous functions, has not been yet positively determined. Uræmia probably enters as an important factor; in the active stages of fevers, and in the declining stages when the circulation is oppressed and languid, and the prognosis is grave, elimination by the kidneys is always imperfect. Hence an important part of the treatment should be to promote the excretion of the poison and the removal of effete matters. Unfortunately, this indication can be but imperfectly met. All that can be done is by suitable nutrients and stimulants to sustain the organic forces in their struggle with the foe, and to favor elimination by the kidneys and other emunctories. The various diluents (lemonade, barley-water, effervescent drinks, plain water, etc.) which are so freely given, because so constantly craved, promote excretion by the kidneys. Milk is often prescribed *ad libitum* as the sole drink and nourishment; its diuretic properties are well known. Some clinical authorities are in the habit of ordering mild diuretic mixtures (solutions of nitrate of potassium, of sweet spirits of nitre, with sometimes the addition for several successive days of a little digitalis) all through the fever, and claim good results.—*Therapeutic Gazette*, September 15, 1891.

TREATMENT OF TYPHOID FEVER.—"Dr. Tordeus has been employing with considerable success a treatment for typhoid fever in the St. Pierre Hospital, Brussels, which consists essentially of moderate doses of an antipyretic combined with an antiseptic. Thus ten grains of acetanilide and an equal quantity of resorcin, or about half that amount of thymic acid, are made up into a five-ounce mixture with a compound decoction of aloes, and tablespoonful doses given every three hours. This was found to exert a remarkably beneficial effect not only on the temperature, but also on the general condition of the patients. From trials made with acetanilide alone, it was evident that the antipyretic effect was almost entirely due to the combination with it of the resorcin or the thymic acid. Several children were included among the patients so treated, the doses given being, of course, proportionately smaller. Dr. Tordeus is of the opinion that treatment of a similar description will be found suitable in other zymotic diseases; indeed, he has tried a combination of acetanilide and benzoic acid in measles and in croupous pneumonia, the latter drug being selected in preference to resorcin on account of its possessing expectorant as well as antiseptic properties."—*Lancet.*

THE DRY TREATMENT OF CHANCROIDS.—It is generally conceded that if chancroidal ulcers can be kept very dry, a great step has been taken toward their rapid healing. With this view, the following procedure has been used to some extent in the surgical divisions of Bellevue Hospital, New York: A small roll of absorbent cotton about one-half an inch in diameter and long enough to surround the penis just behind the corona, is put in that position after the prepuce has been well retracted. A rubber thread band is slipped over this ring of cotton in order to hold it in place. By this means the sulcus behind the glands is obliterated, which is especially liable to retain the secretions, and the prepuce is held back from contact with the ulcerated surface. The cotton absorbs the exudation from those surfaces almost as soon as formed. The dressing is light, is easily handled, and may be renewed as often as need to keep the parts in a dry condition. In addition to chancroids, herpes preputialis and venereal warts have been found to heal rapidly under the use of this dressing; sometimes no other treatment has been found necessary for these local lesions.—*Canada Record.*

THE PROCLIVITY OF WOMEN TO CANCEROUS DISEASE.—Dr. Snow says that the number of women who apply at the Cancer Hospital is twice as great as that of the men, and this notwithstanding that the cases of cancer of the lip and tongue are almost all males. This excess of females is due to the prevalence of malignant disease of the uterus and mamma. He then asks why these organs are rich in cell-elements. Second, they are frequently exposed to irritation. Third, their normal condition and nutrition are interfered with by circumstances which he considers are more or less directly the result of what is called civilized life. Of these he specially blames constipation, over-pressure at school, the abuse of tea, and tight-lacing.—*Medical Record.*

THE INFLUENCE OF GRAVE-YARDS ON PUBLIC HEALTH.—Dr. J. W. Carhart, of Lampasas, Texas, has written a paper on this subject in which he drew the following conclusions:

From whatever standpoint this subject was approached, it must be with care and gentleness, since the grave-yard, though a constant menace to public health, had a pseudo-sacredness fostered by the profoundest sentiment of our nature.

The method of the disposal of the dead should be founded on reason and not on custom or sentiment.

The interment of the dead in the earth was never en-

forced by a statute, Jewish or Christian, and was merely incidental to both dispensations.

No law, human or divine, require us to dispose of the dead in a manner prejudicial to the health and comfort of the living.

While it might be an open question as to the right of the State to decide as to the manner of the dis disposal of the dead, unless in exceptional cases, it it was clearly the province and duty of the State to prevent such disposal as would in any wise jeopardize the interests of the living.

From all the facts at our command, we were led to the conclusion that the graveyard should become a thing of the past, and that incineration was the method most in accordance with science, sanitation, æsthetics, reason, and religion.

He would add, as a corollary to these several conclusions, that, since the intelligent, broad-minded physician was the almost exclusive guardian of public health in seeking to prevent the development and spread of disease, it was plainly his duty, when cemeteries were being located, to use his best endeavors to have them so placed as to jeopardize as little as possible the public health; and for its moral effect he should encourage efforts to beautify existing cemeteries; and that he should seek, as fast as possible, without too much violence to the tender sensibilities of the masses, to encourage incineration of the dead, or some other method more in harmony with sanitary science than the common modes now practiced.—*Medical Age.*

MISCELLANY.

MISSOURI VALLEY MEDICAL SOCIETY.—The Medical Society of the Missouri Valley will be held at Lincoln, Nebraska, December 17 and 18, 1891, at the Lindell hotel, corner Thirteenth and M streets.

First Day.—7:30 P.M.—Registration of Committee of Arrangements. 8:00 (*a*) Organization. (*b*) Report. Committee on Credentials. (*c*) Reading Minutes. (*d*) Miscellaneous Business. (*e*) Report. Committee of Arrangements.

Address by the President:—Higher Medical Education in the Missouri Valley.

Presentation of Papers.

1. Tumors of the Vocal Cords with Specimens, Hal Foster, M.D., Kansas City, Mo.
2. Self Tied Knot in a Funis, A. Bowen, M.D., Nebraska City, Neb.
3. Appendicitis, from the Standpoint of a General Practitioner, R. M. Stone, M.D., Omaha, Neb.
4. Pelvic Surgical Disease and Complications, How Dealt with, A. H. Cordier, M.D., McPherson, Kans.

10:30—Banquet at the Lindell.

Second Day.—9.00 A.M.—Report of Committees.

Presentation of Papers.

1. Removal of Faucial Tonsils by Galvano-Cautery Snare, H. W. Loeb, M.D., St. Louis, Mo.
2. Treatment of Fractures of Humerus. Report of Twelve Cases, Joseph Neville, M.D., Omaha.
3. Tubercular Knee-Joint Inflammation, with Specimens, A. F. Jonas, M.D., Omaha.
4. Rhematism, S. Lane, M.D., Lincoln.
5. Synopsis of Ætiology, Pathology and Treatment of Sciatica, S. Grover Burnett, M.D., Kansas City.
6. Appendicitis, treatment of, with Illustrative Cases, J. E. Summers, Jr., M.D., Omaha.
7. Pathological Tonsil and its Relation to Nasal Drainage, F. D. Crim, M.D., Lincoln.
8. The Irritable Mucous Membrane in Gouty Subjects, Wm. Davis, M.D., Omaha.
9. Reflexes due to Hypertrophied Follicles of the Tongue, W. L. Dayton, M.D., Lincoln.
10. New Observations in the Use of Sulphonal, S. G. Burnett, M.D., Kansas City.

Miscellaneous Business.

INDIAN TERRITORY MEDICAL ASSOCIATION will meet in Muskogee, I. T., Tuesday, December 8, 1891.

Section on Practice of Medicine.—"Malarial Fever," S. A. Bryan, M.D., Wagoner, I. T.; "Malarial Hæmaturia," A. M. Clinkscales, M.D., Vinita, I. T.; "Some Advances in Medicine," W. B. Winn, M.D., Wichita, Kan.

Obstetrics and Gynecology.—"Ovarian Hyperæmia and Hæmorrhage," J. M. Boling, M.D., Claremore, I. T.; "Complicated Pregnancy," G. A. McBride, M.D., Ft. Gibson, I. T.; "Chronic Metritis," E. N. Wright, M.D., Lehigh, I. T.

Surgery.—"A few Errors of Country Surgeons," H. B. Smith, M.D., McAlester, I. T.; "Typhlitis and Perityphlitis," G. R. Rucker, M.D., Eufala, I. T.; "Abscess of Glands of Bartholin, with Report of Case," L. C. Tennent, M.D., McAlester, I. T.

Papers Contributed by Request.—"Obscure Abdominal Abscess, Autopsy, Report of Case," Philip Donahoo, M.D., Fairland, I. T.; "Abscess of the Middle Ear, Sequelæ," B. F. Fortner, M.D., Vinita, I. T.; "Pleurisy with Effusion," F. B. Fite, M.D., Muskogee, I. T.; "Peritonitis Following Amputation of Thigh—a Case," Drs. Dawson and Ledford, Afton, I. T.

NOTICE.—We are constantly in receipt of letters from physicians stating that they have not received the copy of "The Biography of Ephraim McDowell, M.D.," for which they subscribed through the author, Mrs. Ridenbaugh, and for which they paid in advance at the time of subscribing. As in these letters we are held accountable for the delay, in justice to ourselves we wish to explain that we are merely acting as publishers for Mrs. Ridenbaugh; that she paid for the printing of the book herself; that we have nothing whatever to do with the delivery of the books; no list of subscribers was furnished to us; we are in no way responsible for the filling of these orders; the book was merely manufactured for Mrs. Ridenbaugh at her expense; she retained the list of subscribers and was to attend to the delivery of the same.

We believe she was engaged in filling these subscriptions when she was taken sick and is just recovering from a long and severe illness, which accounts for the delay.

Any letters addressed to Mr. Louis T. Valentine, Knickerbocker Building, corner 14th St. and 5th ave., New York City, whom Mrs. Ridenbaugh has recently married, and who is managing the sale for her, will be given prompt attention. CHAS. L. WEBSTER & CO.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from November 21, 1891, to November 28, 1891.

Capt. Marlborough C. Wyeth, Asst. Surgeon U. S. A., leave of absence granted on surgeon's certificate of disability is extended three months, with permission to enter the Army and Navy General Hospital, Hot Springs, Ark.

Capt. William R. Hall, Asst. Surgeon U. S. A., granted leave of absence for twenty days.

Capt. Arthur W. Taylor, Asst. Surgeon U. S. A., leave of absence granted for seven days is hereby extended twenty-three days.

Capt. Marshall W. Wood, Asst. Surgeon U. S. A., is granted leave of absence for three months, with permission to apply for an extension of one month.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending November 28, 1891.

Middleton Semmes Guest, commissioned an Asst. Surgeon in the Navy November 19, 1891.

Surgeon Wm. Martin, ordered to the U. S. S. "Thetis."

Asst. Surgeon Geo. B. Wilson, detached from U. S. S. "Thetis," and granted two months' leave.